iTunes Visual Analysis Report

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report provides a detailed analysis of the process used to evaluate the visual interface for iTunes, Apple's digital music application. The evaluation was performed by applying a set of seven visual heuristics focusing on the core functionality of iTunes: importing, organizing and playing digital music and burning CDs. The goal of this evaluation was to identify aspects of iTunes visual interface that violated basic visual principles and could thus create usability problems. Based on a series of visual principles outlined by Judy Olson (lecture, March 22, 2005), seven heuristics were developed for this evaluation:

1. Use pop out effectively
2. Use Gestalt effectively
3. Interface effectively draws user's visual attention to relevant areas
4. Interaction with interface takes learned order into account
5. Minimize user's effort to understand system visually
6. Text in interface is fully readable
7. Interface is well-balanced

Overall, iTunes provides a well balanced, simple, and clean interface that lends itself to ease of use. With its focus on simplicity, users are able to perform most common tasks by learning to recognize several visual icons and remain undistracted by garish use of color. Of the problem areas identified during this visual analysis, none are ranked more severely than a 'minor' usability problem. In fact, nearly half of the problem areas are ranked as a heuristic violation where it is unclear if the violation actually creates a usability problem. According to a survey of users, iTunes was found to be easy to use and users were more than satisfied with it. No single area in the product stands out as having significant usability problems.

The problems found during this evaluation are clustered into seven areas and are ranked according to their severity and the ease with which the problem can be solved. The seven problem areas identified are all ranked either as minor/superficial usability problems or as heuristic violations where the impact on usability is unclear:

1. **Important screen elements do not pop out visually**
2. **Existing feedback is not cognitively processed**
3. **Balanced screen disrupts flow of use**
4. **Few visual cues for stopping tasks**
5. **Accessibility not fully addressed with interface text**
6. **Icons require users to learn new metaphors**
7. **Small color palette for interface does not maximize color use to assist users**

Each of these problem areas will be analyzed in more detail in the body of the following report.

INTRODUCTION

This report describes the visual analysis process and findings for Apple's digital music application, iTunes. It begins with summary information describing the product and its target population, then moves into an overview of the analytical methods, the specific goals for this project, and a description of the general visual heuristics used to complete the analysis. Following is a summary of the major problems identified by the visual analysis process prioritized according to their severity and impact on the user experience and then a more detailed exploration of the findings related to each problem. The report concludes with a summary of the findings and a list of the specific heuristics used to complete this analysis.

PRODUCT INFORMATION

Product Description

iTunes is a digital music application that allows both Windows and Mac users to create and manage their digital music library on their computer. Users can import songs from their favorite CDs to store as MP3s in the music library; they can make their own mixes by creating customized play lists, including smart play lists; and they can burn play lists to CD. While listening to music, users can watch visualizations either in the iTunes window or as a full screen graphic. iTunes also interfaces easily with iPod, Apple's popular MP3 player, for simple transfer of music between the computer and the mobile device. A unique feature of iTunes is the iTunes® Music Store where users can search for and buy music for 99 cents a song without having to subscribe to anything. iTunes can be downloaded free from the Apple website - www.apple.com.

Target Population

iTunes is targeted to people using computers running MacOS X, Windows 2000 or Windows XP. In addition, anyone who listens to, organizes, or downloads digital music is part of the target population. There are no specific demographic targets identified.

Figure 1: iTunes Interface

VISUAL ANALYSIS TECHNIQUE

Methodology

The visual analysis was conducted using the same methodology as a traditional heuristic evaluation. This heuristic method allows evaluators to discover possible usability problems in a product or application in a single afternoon. Later, more expensive and extensive user testing can investigate the problems identified through heuristic evaluation. When conducting a heuristic evaluation, evaluators compare a pre-defined set of specific usability principles with a product or web site interface while attempting to accomplish actual system tasks. Evaluators may either work individually, combining findings later, or they may perform the evaluation at the same time with each individual focusing on several different heuristics.

For this visual analysis, a set of heuristics specific to visual design was used to conduct a heuristic evaluation that focused on the visual elements of the iTunes interface. These heuristics were based on visual principles such as **visual primitives** (the ease with which the eye perceives color and difference), **detection and discrimination** (amount of difference required for detection), **perceptual groups** (use of Gestalt principles to interpret patterns as wholes), **short term memory** (processing based on full analysis of features vs. recognition of context), **long term memory inferences** (inferences subconsciously made based on size, color, etc.), and **long term memory storage** (automatic use of familiar patterns when attempting to view and comprehend an interface) (Olson, lecture, March 22, 2005).

Specific Project Goals

For this project, three evaluators developed and used a set of seven heuristics to identify visual display problems in the iTunes digital music application interface. This evaluation focused on the core functionality of the iTunes interface: importing, organizing, and playing digital music and burning CDs. The interaction with Apple's iPod MP3 player and the iTunes online Music Store were not investigated. The evaluators each prepared the results for several heuristics individually, and then the project manager clustered the results to identify several specific visual problems, ranking them according to their severity and the ease with which they could be fixed. Group feedback was used to refine the problem areas and their rankings—several areas were merged and one was removed entirely.

The goal of this project was to identify major visual display flaws within the interface of the iTunes digital music application by applying visual principles to established heuristic evaluation techniques. In addition, the heuristic evaluation revealed controversial situations where the interface appears to violate one (or more) of these visual heuristics, but may remain usable for the user.

Heuristics Used

The following set of visual heuristics was developed based on the visual principles discussed by Judy Olson (lecture, March 22, 2005). The heuristics were created in order to express

recommendations that described more clearly how a visual display can follow visual principles in order to make an interface that is visually intuitive for its users. To aid in the evaluation process, these broad heuristics were supplemented with more descriptive notes and examples. A more detailed list of the heuristics is supplied in Appendix A.

Number	Heuristic
1	Use pop out effectively
2	Use Gestalt effectively
3	Interface effectively draws user's visual attention to relevant areas
4	Interaction with interface takes learned order into account
5	Minimize user's effort to understand system visually
6	Text in interface is fully readable
7	Interface is well-balanced

Prioritization of Problems

In order to group the findings resulting from this visual display analysis process, we clustered specific evidence of heuristic violations into seven problem areas. To further understand the impact of each of these problems, we estimated both its severity in terms of usability principles and the ease with which the problem might be solved. Problem severity ratings were impacted by the frequency with which the problem occurred, the ease with which the user could overcome the problem, and the persistence of the problem—whether it could be solved once or would bother the user every time a task was attempted. This resulted in a dual rating for each problem, which was used to prioritize the problem areas for presentation in this report. The tables below define the severity and ease of fix rating systems applied. Severity ranks are based on those defined by Jakob Nielsen.[1]

Severity Rankings	
Rating	**Definition**
0	Violates a heuristic but is unclear if it creates an actual usability problem.
1	Superficial usability problem: may be easily overcome by user or occurs extremely infrequently. Does not need to be fixed for next release unless extra time is available.
2	Minor usability problem: may occur more frequently or be more difficult to overcome. Fixing this should be given low priority for next release.
3	Major usability problem: occurs frequently and persistently or users may be unable or unaware of how to fix the problem. Important to fix, so should be given high priority.

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[1] *Severity ratings for usability problems.* Accessed February 22, 2005, from
http://www.useit.com/papers/heuristic/severityrating.html

4	Usability catastrophe: Seriously impairs use of product and cannot be overcome by users. Imperative to fix this before product can be released.

Ease of Fixing Rankings	
Rating	**Definition**
0	Problem would be extremely easy to fix. Could be completed by one team member before next release.
1	Problem would be easy to fix. Involves specific interface elements and solution is clear.
2	Problem would require some effort to fix. Involves multiple aspects of the interface or would require team of developers to implement changes before next release or solution is not clear.
3	Usability problem would be difficult to fix. Requires concentrated development effort to finish before next release, involves multiple aspects of interface. Solution may not be immediately obvious or may be disputed.

SUMMARY OF FINDINGS

After completing a second heuristic evaluation of the iTunes digital music application based entirely on its visual design, we identified seven problem areas that violate psychological principles related to perception, image detection and discrimination, and short term memory. These problems have been prioritized below, with the most severe and easiest to fix problems listed first. Overall, the iTunes interface is well-designed and visually pleasing – none of the listed problems rank above being a 'minor usability problem.' Although customizable to users, the individual elements within the iTunes interface are well-balanced and proportional in size. The font was chosen by Apple for its readability and the interface colors are soothing. Most often, the iTunes interface violates visual heuristics because it makes overly judicious use of pop out. For new users, it is not always successful in drawing their attention to the buttons needed to help them accomplish primary tasks, and the balanced placement of the buttons helps to make important functionality a bit harder to find. In addition, the feedback that is usually present in iTunes is very subtle – often appearing in the pre-existing display bar rather than opening a new dialog box. This subtlety increases the chance that users will miss the feedback altogether and be taken by surprise by an action or be unsure whether a task completed successfully. The visual heuristic violated most often in iTunes is *#1 – Use pop out effectively* (5 out of 7 problems). All seven problem areas will be discussed in more detail.

#	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
1	*Important screen elements do not pop out visually*	2	2	#1, #3, #4	Pop Out, Effectively Draw User's Attention, Learned Order
2	*Existing feedback is not cognitively processed*	2	2	#1, #3, #4	Pop Out, Effectively Draw User's Attention, Learned Order
3	*Balanced screen disrupts flow of use*	2	3	#1, #2, #3	Pop Out, Gestalt, Effectively Draw User's Attention
4	*Few visual cues for stopping tasks*	1	2	#1, #4, #5	Pop Out, Learned Order, Minimize Effort to Understand System
5	*Accessibility not fully addressed with interface text*	0	1	#6	Text Readable
6	*Icons require users to learn new metaphors*	0	2	#5	Minimize Effort to Understand System
7	*Small color palette for interface does not maximize color use to assist users*	0	3	#1, #5	Pop Out, Minimize Effort to Understand System

SPECIFIC PROBLEM AREAS

1. Important screen elements do not pop out visually.

| #	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
1	*Important screen elements do not pop out visually*	2	2	#1, #3, #4	Pop Out, Effectively Draw User's Attention, Learned Order

Problem:

Some elements in the iTunes interface are immediately obvious, even for a user looking at the interface for the first time. For instance, the play controls in the upper left corner of the interface are both highly visible and highly recognizable. However, playing music is only a small portion of the total iTunes functionality and other buttons/visual elements in the interface that also encapsulate often-used functions are more difficult to locate. When users don't immediately identify these easiest paths to common functionality, they have to perform a more manual search through the interface to accomplish their desired task.

Evidence:

Using the principle of learned order, the eye generally begins to observe the interface in the top left, and then proceeds more or less sequentially down to the lower-right corner of the interface. In order to break this pattern, the interface must use some type of pop out to grab the user's attention. In the iTunes interface, the play controls in the upper left corner are immediately recognized. However, the top-right corner of the interface has two tools that provide even more important functionality—the Search bar and the Import/Browse/Burn Disc button. When looking at the interface, the blank display bar to the right of play controls tends to block the eye from reading further right and the light use of color on the Import/Browse/Burn Disc button is not enough to draw the user's eye out of its expected patterns. Instead, the eye tends to travel down into the source list in the same way a column of text would be processed. While a prominent label might help the button to stand out more visually, the text used in the existing label is the same size and weight as that used for all the songs in the song list. In fact, it is even more difficult to read than the song list text because it is displayed so as to appear 'etched' into the interface, thus causing it to blend in with the background.

User's eye is drawn downward into the Source List.

Search and Burn Disc do not pop out; label is difficult to read.

Another situation where an important element on the screen does not pop out visually occurs after an audio CD is inserted into the CD drive. The audio CD appears in the middle of the source list, between the Music Store and the smart play lists. While iTunes automatically highlights the CD in the Source List when it is first inserted, if the user clicks elsewhere, the CD loses focus and can become lost within the source list. The result is that users have to search the entire source list carefully in order to find the CD. This problem was observed during the user tests when two out of five users, both novices, had difficulty locating the CD in the Source List when trying to import music. In general, items in the source list can become more difficult to find as the list gets longer. In reality, the Library is the root of all the play lists in the source list, but its label and icon do little to differentiate it from other play lists.

Audio CD lost in middle of the source list.
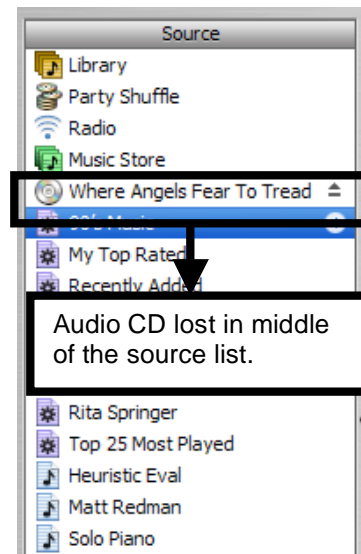
Recommendations:

Greater variations in color and font size could be used to help users quickly identify helpful buttons/tools in the visual interface. Because the user must look all the way to the right to find the Search bar and Import/Browse/Burn Disc button, these features should display with more prominent colors and labels. Differentiation in text size or weight in the source list might help users identify top level items, such as the Library or an Audio CD. A hierarchical browsing system similar to that employed in Windows Explorer could be used to locate play lists underneath the parent music library and could allow them to be collapsed or expanded as desired. Also, physical location should be considered in the context of user tasks. When a user inserts an audio CD into the CD drive, perhaps it could be displayed more prominently at the top or bottom of the source list, since it is likely the user intends to work with that CD.

2. Existing feedback is not cognitively processed.

#	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
2	*Existing feedback is not cognitively processed*	2	2	#1, #3, #4	Pop Out, Effectively Draw User's Attention, Learned Order

Problem:

In general, iTunes provides helpful feedback to users for tasks that require more than a few seconds of processing time. However, the manner in which the feedback is often displayed visually seems to make it more likely that users do not actually cognitively process this feedback.

Evidence:

As in problem area #1, this problem finds that iTunes does not use pop out effectively draw the user's attention to feedback being provided. This is especially problematic when that feedback is presented in an unexpected location. When burning a CD, the user inserts a blank disc into the CD drive and then clicks on the Burn Disc button. A message appears in the display bar to the left of the of the Burn Disc button instructing the user to click Burn Disc again to begin burning the CD. This feedback is very helpful in explaining the process that must be followed to burn a CD, but it is not always read and cognitively processed by the user. As the display bar is to the left of the Burn Disc icon, users are required to bounce back to the left in order to see the feedback message. In addition, users do not necessarily expect feedback messages to appear in the display bar. During user testing, at least two participants indicated that when burning a CD, they expect to see a dialog box requesting confirmation, not a message flashing in the display bar. Finally, the flashing feedback text is no larger or more prominent than the rest of the text in the interface, nor is it highlighted in a different color to help draw the user's eye. In fact, the flashing orange and black Burn Disc icon lures the user's eye back to the right, distracting his/her attention from the real feedback message to the left.
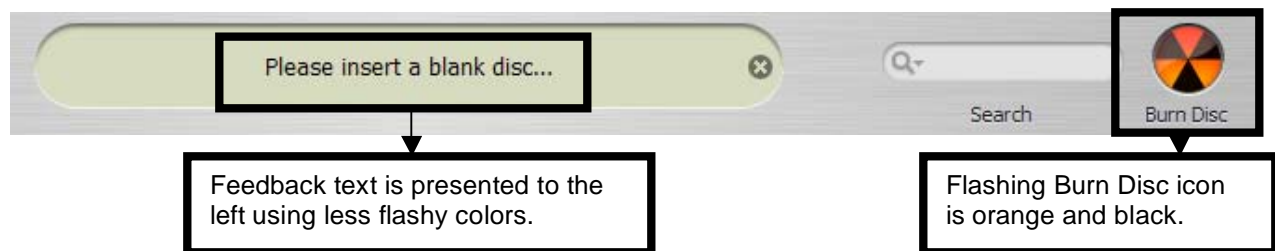
In general, feedback in iTunes is subtly presented using text in the display bar rather than more highly visible windows or dialog boxes. Since this does not always meet the user's expectation to be confronted with a dialog box, and the text itself does not stand out visually from the rest of the interface, valuable information may go unnoticed.

Recommendations:

iTunes could employ dialog boxes or other means of grabbing the user's attention more frequently when displaying important feedback messages. One of the experienced iTunes users participating in the user test suggested that she would like to see a dialog box appear after clicking on the Burn Disc icon to confirm the burn process. This would also provide an opportunity for iTunes to remind users of current settings before actually burning a CD. If requiring a user to select OK/Cancel to continue working within iTunes is undesirable, feedback messages could be presented using some type of popup box that disappears on its own after a pre-determined time period. The appearance of a new element in the interface would help draw the users' attention to the feedback message, but they would not have to interrupt their work to click on a button. Tactics such as this are used in browsers to notify users that a pop-up has been blocked and in some email programs (such as Thunderbird) to notify users that a new e-mail message has been arrived.

3. Balanced screen disrupts flow of use.

#	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
3	*Balanced screen disrupts flow of use*	2	3	#1, #2, #3	Pop Out, Gestalt, Effectively Draw User's Attention

Problem:

iTunes presents users with a very well-balanced and organized interface. For instance, the buttons at the top and bottom of the window are evenly divided between the left and right sides. The display bar at the top and the time display at the bottom of the window are centered, and the source list is an even multiple of the width of the song list. This makes the interface feel very neat and clean to the user. However, balancing buttons between the left and right side of the interface means putting them in places that are less easy to see or do not follow the eye's natural progression through the interface (as described in problem area #1).

Evidence:

Even placement of buttons throughout the iTunes interface sometimes interferes with the Gestalt grouping of items that are functionally related. For instance, the play controls are primarily grouped in the upper-left corner of the window. However, the eject, shuffle, and repeat buttons, which are all also related to playing digital music or audio CDs, are scattered in other parts of the interface. This may require users to perform a visual search throughout the interface to find the desired functionality.

In addition, the placement of buttons in the upper-right corner of the interface often requires users to select a source or song in the central area of the interface and then look back to the

upper-right area to find the button that can be used to perform an action on that selection. As discussed in problem area #1, this means that the flow of tasks in the interface does not always flow from left to right and top to bottom, which can interfere with the user's natural expectations. For instance, once a CD has been selected in the source list, the user must search up and to the right to find the Import button. Two out of five participants in the user test, both novices, had trouble finding the Import button after selecting a CD in the source.

Recommendations:

iTunes developers would need to perform usability tests using prototype mockups to determine if changing the placement of buttons would actually improve the usability of the interface. It is possible that unbalancing the interface and moving buttons would cause other unforeseen usability problems. However, it would be worthwhile to consider placing the eject, shuffle and repeat button together with the other play controls. The Browse/Import/Burn Disc button might be more effective if moved toward the bottom of the interface, and the Search bar might be noticed by more users if it was closer to or somehow a part of the song list area.

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4. Few visual cues for stopping tasks.

#	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
4	*Few visual cues for stopping tasks*	1	2	#1, #4, #5	Pop Out, Learned Order, Minimize Effort to Understand System

Problem:

While iTunes users may find it easy to start a task such as importing a CD, they may have more trouble determining which interface element can be used to stop the task. In general, the iTunes

interface provides few visual cues to users who wish to stop an ongoing task. Similarly, it provides little opportunity to users who wish to undo an action they just completed.
Evidence:

While it is possible to cancel tasks that require more than a few seconds to complete, the iTunes interface does not provide easily identifiable methods to perform cancellations. Because the buttons available to cancel a task are not well-labeled and are not emphasized using pop out, it becomes more difficult for the user to understand how (or whether) the system supports cancellation of an ongoing task.

As part of the user test, participants were asked to begin importing an audio CD and then stop the import process before it completed fully. None of the users had ever tried to do this, and all of them indicated that they weren't sure what they should click to do this. While most of them settled on one of the two buttons that would do the job, the majority were surprised that the element they clicked on actually stopped the import. Several of the users attempted to scroll through the interface looking for relevant tooltips, but none of the tooltips mentioned anything about stopping or pausing import of an audio CD. The users' confusion indicates that iTunes does not have strong visual cues that illustrate how to stop the current task.

A similar situation occurs when a user wants to stop playing a song. The play control has an obvious pause button, but no stop button. Based on learned experience with physical CD players, which provide the model for iTunes' play controls and often have a button marked pause/stop, some users will search for a stop button elsewhere before realizing that the pause button can also be used. In this situation, the user lacks the expected visual cues for stopping a song.

Pause button – no visible stop button.
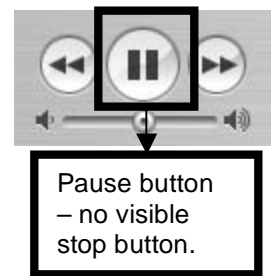
Recommendations:

The simple addition of tooltips would help show users how to stop the current action. For instance, the Import button's tooltip could be edited so that when songs are currently being imported, it reads 'Stop import.' In addition, a tooltip could be added to the small 'x' button in the visual display to make users aware of its functionality as a stop/cancel button.

In the play controls, the pause button could display a pause/stop symbol rather than just a pause symbol. Although this visual change does not alter the functionality of the button, it would be helpful to users explicitly looking for a stop button based on experience with other music players. In addition, it conforms to standards previously used in many CD players.

5. Accessibility not fully addressed with interface text.

| #	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic

5	*Accessibility not fully addressed with interface text*	0	1	#6	Text Readable

Problem:

The text used in the iTunes interface is the same font used throughout the Macintosh operating systems and applications. Its usability and readability was heavily researched by Apple, and the result is a sans serif font that is comfortable on the eyes. While the text size used in the iTunes interface can be altered, it does not have the full range of options that might be helpful in making the application accessible to a user with vision problems. Visual displays should strive to provide text that is readable to all possible users.

Evidence:

By default, the text used in iTunes is quite small – the font size used in all menus, labels, and tooltips, in addition to the source list and the song list, is about a 10-11pt font size. By contrast, term papers are generally typed using a 12pt font size. For users with visual impairments, only two font sizes are made available – the default small font size or one that is somewhat larger. However, changing the text size (under the Preferences menu) to 'Large' only changes the text in the source list and song list. The column labels, button labels, tooltips, menus, and display bar remain at the default smaller size. In addition, there are no options to change the font color or the background colors, which can be useful to users with specific visual impairments.

iTunes with source and song text set to 'Large'
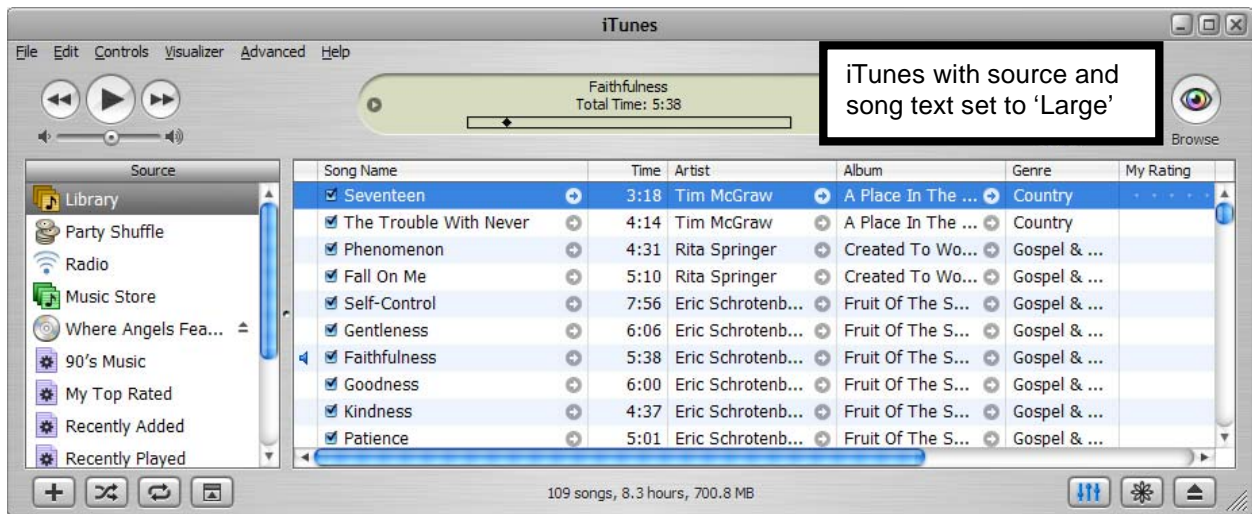
Recommendations:

iTunes could offer more robust options for altering the appearance of the text in the interface. This is especially important because a good portion of the interface is devoted to the textual displays of the source list and song list. By offering users more fine-grained options for changing text size as well as options to change the colors used for the text and the background, the iTunes interface will be more fully accessible to users with a range of visual impairments. In addition,

changes made to the appearance of text in the interface should apply to all of the text, not just text in specific portions of the window.

6. Icons require users to learn new metaphors.

#	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
6	*Icons require users to learn new metaphors*	0	2	#5	Minimize Effort to Understand System

Problem:

The iTunes interface frequently uses icons without textual labels on its buttons. While the icons used for the play controls are generally understood, those used on a number of other buttons are not as effective in conveying their meaning. This area may not pose real-life usability problems because many of the buttons in the iTunes interface have descriptive tooltips. However, users are still required to either memorize the meaning conveyed by new iconic symbols or continually mouse-over the buttons to read their tooltips when trying to complete a specific task. When users are required to memorize new icons in order to use the interface, it increases the effort required to understand the system.

Evidence:

For users unfamiliar with other digital music applications, the icons used for buttons in the iTunes interface may be entirely new. During the user test, one experienced user commented that even with tooltips, the images used on the buttons didn't seem to represent their actual functionality. In particular, she pointed out the smart play list, visual effects, and song artwork buttons as examples of images that do not help the user distinguish the button's purpose.

Recommendations:

The choice of icons to represent specific functionality in iTunes is difficult because many of the tasks do not have direct metaphors in other systems. For instance, the concept of adding a play list doesn't correspond to a function available in most CD players. It also does not correspond directly to tasks performed in other well-known software applications. One way to get around this problem is to incorporate more text into the interface alongside the icons used for buttons. While not a digital music application, Google's Picasa2 digital photo management software employs a similar approach, using both icons and text to represent buttons in the interface. Persistent descriptive labels for buttons provide users another alternative to memorizing the purpose of a new button or mousing-over the button to read its tooltip.

Use of both icons and text helps convey purpose of various buttons in the interface that don't have common metaphors.

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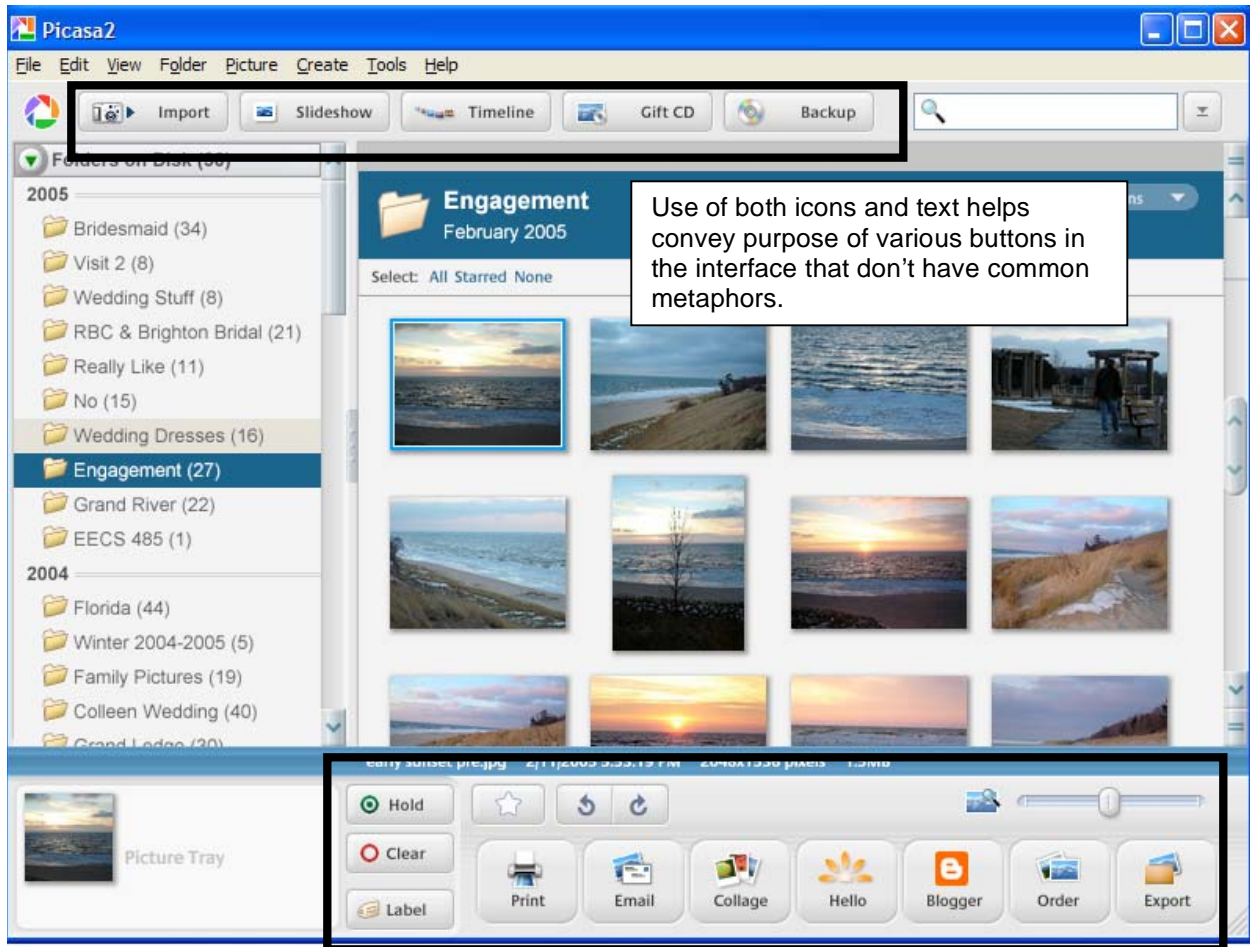
7. Small color palette for interface does not maximize color use to assist users.

#	Problem	Severity Ranking	Ease of Fixing Ranking	Heuristic Number	Broad Heuristic
7	*Small color palette for interface does not maximize color use to assist users*	0	3	#1, #5	Pop Out, Minimize Effort to Understand System

Problem:

Color is already used to help the user navigate through the iTunes interface. For example, blue highlighting is used consistently to indicate the current action or selected item. The same blue is also used to indicate when the song list has been sorted by a specific column or when the Import button has been clicked. However, the overall color tone of the interface is a muted gray. By limiting the interface colors to primarily blue and gray, iTunes loses opportunities to help users understand the interface more easily through use of color variations and pop out.

Evidence:

The visual principle of pop out can be used to help users navigate through an interface. Changes in color are useful when there are elements that the interface designers would like the users to detect and process immediately. Pop out and color variation can help a user navigate through an interface by indicating important areas as well as visually demonstrating to the user which element has been selected or is being viewed. In iTunes, variations of the color gray are used in situations where it would be better to utilize distinct colors. For instance, dark gray is sometimes used to indicate that an option is selected, while light gray is used to indicate that an option isn't available. A selected item in the source list or artist in the browser is highlighted with a dark gray, but light gray is used to indicate that the play controls aren't available within the Music Library and that the Search box cannot be used within the Party Shuffle. This use of gray for multiple purposes would be especially troublesome for colorblind users who may perceive other colors as shades of gray, as well. In general, the use of muted gray tones throughout the iTunes interface may cause the various elements to blend together visually, making it more difficult for users to identify individual buttons or tools.
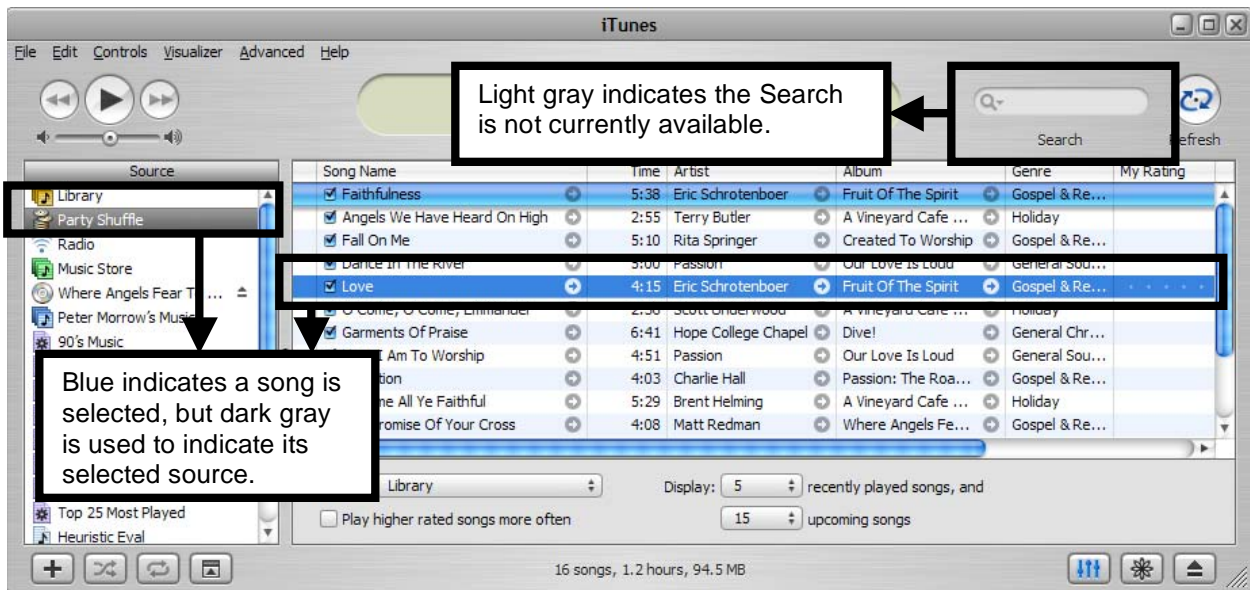
Recommendations:

We are aware that the gray, brushed-metal appearance of iTunes is a common interface style used among applications for Macintosh computers. However, it might be worthwhile for iTunes designers to perform comparative user testing of the current color scheme with a prototype that employs more colors and less gray. While it is possible the results of this test would show that adding more color to the interface simply distracts users, there may be other interesting results. Certainly, if iTunes designers continue to use a blue/gray metaphor for the interface, the use of blue highlighting should be applied consistently to any selected item. Increased use of color could help to group buttons with related functionality that are physically separate on the interface (such as the play controls and shuffle/repeat buttons) or could be used to draw the user's attention to specific buttons (like the overlooked Import/Browse/Burn Disc/Refresh button).

SUMMARY

While Apple's iTunes digital music application provides a well balanced, simple, clean interface that is generally considered easy to use, a detailed visual analysis based on seven general visual principles revealed a number of heuristic violations that may cause minor usability problems. These specific heuristic violations were clustered into seven general problem areas and ranked according to severity and the ease with which they could be fixed. All seven problem areas, ranked from possible usability problem to minor usability problem, were addressed in more detail in this report, providing information about the general problem, some specific examples, and a high-level recommendation for solving the problem.

The seven problem areas are:

1. **Important screen elements do not pop out visually**
2. **Existing feedback is not cognitively processed**
3. **Balanced screen disrupts flow of use**
4. **Few visual cues for stopping tasks**
5. **Accessibility not fully addressed with interface text**
6. **Icons require users to learn new metaphors**
7. **Small color palette for interface does not maximize color use to assist users**

By investigating these problem areas in more depth to determine if the usability of the iTunes interface can be enhanced through changes to the visual display, iTunes designers will be able to make an already well-designed product even easier to use.

APPENDIX A: DETAILED HEURISTIC LIST

1. Use pop out effectively
- User attention is drawn is drawn to relevant aspects of interface.
- Important areas of the interface are effectively detected by the user.
- Color differences are big enough to detect.
- Colors on the opposite ends of the color wheel are not used together.
- Pop-out increases ease of navigability through color, shape, texture, animation

2. Use Gestalt effectively
- Related items are grouped together through use of Gestalt principles.
- In particular, the Gestalt principles of nearness and similarity are used.

3. Interface effectively draws user's visual attention relevant areas
- User should not have to perform full visual search of interface.
- Any visual searching is quick – user does not have to hunt.
- Layout of visual elements flows through steps in common tasks.

4. Interaction with interface takes learned order into account
- Interface and user interaction complies with user's learned order.
- User's attention is effectively redirected if learned order is broken.

5. Minimize user's effort to understand system visually
- Minimize user's visual memory load.
- Utilize useful existing metaphors to decrease learning required.
- Where possible, rely on what users are already familiar with, instead of creating concepts/representations from scratch.

6. Text in interface is fully readable
- Font style is legible.
- Font size is large enough to read easily.
- User can change size of font to meet needs.
- Font color is distinct from background colors.

7. Interface is well-balanced
- Elements within interface are balanced top/bottom, left/right.
- Most elements on screen are even multiples of width.