ABSTRACT

Improved techniques to create, browse, rate and/or purchase media asset groups are disclosed. Media asset groups can be created by various users and published to a digital assets manager. Thereafter, the media asset groups can be finalized and made available for on-line purchase. Once the media asset groups are made available for on-line purchase, users can browse, rate and/or purchase the media asset groups at an on-line media store. One example of a media asset group (group of media items) is known as a playlist, which can pertain to a group of audio tracks.
Figure 1
Start

302 Create Proposed Media Asset Group

304 Request Publication?
  NO
  YES

306 Submit Proposed Media Asset Group to Digital Asset Manager

308 Validated Media Asset Group Received?
  NO
  YES

310 Display Validated Media Asset Group

312 Accept Validated Media Asset Group?
  NO
  YES

314 Submit Validated Media Asset Group

End

Figure 3A
Figure 3B

Start

Proposed Media Asset Group Received?

 Identify Media Assets in Proposed Media Asset Group

Determine Availability of Media Assets

Create Validated Media Asset Group

Send Validated Media Asset Group to Requesting Client

Validated Media Asset Group Accepted?

YES

Publish Validated Media Asset Group

End

NO
Obtain images associated media assets in a media asset group

Determine mosaic fill pattern

Create mosaic by arranging images according to mosaic fill pattern

End

Figure 4A
Obtain images associated media assets in a media asset group

Determine image priority

Apply transparency to image with highest priority

Determine mosaic fill pattern

Create mosaic by arranging images over transparent image using determined fill pattern

End

Figure 4B
Figure 4C
Figure 4D
Images

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(a)

(b) 0% transparent

75% transparent

(c)

(d)

Figure 4E
Here are the songs from your playlist that are available in the iTunes Music Store.

- 1. Hummingbirds
- 2. Montana
- 3. Lightning Jacks
- 4. Beautiful Spin
- 5. Springtime #2
- 6. Honey
- 7. Sonic Boom
- 8. Bella Luna
- 9. Fighting for Love
- 10. William's Last Day At Work

Price: $0.99 each song

Learn more about creating a playlist.
Figure 5F
Figure 6C

Undecayed Rating

Decay 0 Days

20 Votes Avg Rating

Decay 30 Days

5 Votes Avg Rating

Decay 60 Days

10 Votes Avg Rating

Decay 90 Days

2.5 Votes Avg Rating

Decay 120 Days

1.25 Votes Avg Rating

Present Day Decayed Rating
Figure 7
PUBLISHING, BROWSING, RATING AND PURCHASING OF GROUPS OF MEDIA ITEMS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a Continuation-In-Part of U.S. patent application Ser. No. 10/833,879, filed Apr. 27, 2004, and entitled “METHOD AND SYSTEM FOR SHARING PLAYLISTS” [Att. Dkt. No.: APL1P31], which is hereby incorporated by reference herein.


BACKGROUND OF THE INVENTION

[0003] 1. Field of the Invention

[0004] The present invention relates to media asset groups and, more particularly, to publishing, browsing and purchasing media asset groups.

[0005] 2. Description of the Related Art

[0006] A media player stores media assets, such as audio tracks, that can be played or displayed on the media player. One example of a media player is the iPod® media player, which is available from Apple Computer, Inc. of Cupertino, Calif. Often, a media player acquires its media assets from a host computer that serves to enable a user to manage media assets. In managing media assets, a user can create playlists for audio tracks. These playlists can be created at the host computer with the help of a media management application. Media assets within the playlists can then be copied to the media player. As an example, the host computer can execute a media management application to manage media assets. One example of a media management application is iTunes® produced by Apple Computer, Inc.

[0007] Typically, at a host computer, a user would create a playlist for their own personal use using a media management application. However, the grouping of the various media assets within the playlist can be useful to other users. Indeed, if the users that are performing the grouping are well-known or noteworthy, there may be particular interest in sharing such playlists. One difficulty with sharing playlists is that the media assets within the playlist can originate from a wide variety of different sources. As a result, given that a playlist does not include the songs or audio tracks themselves, the recipient of the playlist needs to have access to the identified songs or audio tracks in order to re-create the playlist on their own media management application (e.g., host computer). Another difficulty with sharing playlists is that, although on-line music stores provide users of media management application with the ability to purchase songs or albums, playlists are themselves not saleable groupings of media assets, at least not according to the recording industry.

[0008] Thus, there is a need for improved techniques to facilitate sharing and purchasing of playlists.

SUMMARY OF THE INVENTION

[0009] The invention pertains to improved techniques to create, browse, rate and/or purchase media asset groups. Media assets groups can be created by various users and published to a digital assets manager. Thereafter, the media assets groups can be finalized and made available for on-line purchase. Once the media asset groups are made available for on-line purchase, users can browse, rate and/or purchase the media asset groups at an on-line media store. One example of a media asset group (group of media items) is known as a playlist, which can pertain to a group of audio tracks.

[0010] One aspect of the invention pertains to creation of media asset groups of media assets that can be made available at an on-line media store. Another aspect of the invention is the ability to process a created media asset group to ensure appropriate availability of each of the constituent media assets of the media asset group. Still another aspect of the invention pertains to creating media asset group illustrations (e.g., mosaics) to be used with corresponding media asset groups. Yet still another aspect of the invention is the ability to enable users of an on-line media store to rate media asset groups that have been made available.

[0011] The invention can be implemented in numerous ways, including as a method, system, device, apparatus (including graphical user interface), or computer readable medium. Several embodiments of the invention are discussed below.
As a method for creating a group of media assets to be made available on an on-line media asset store, one embodiment of the invention includes at least the acts of: obtaining a proposed media asset group for a plurality of media assets, at least a plurality of the media assets having an media asset illustration associated therewith; producing a media asset group illustration based on two or more of the media asset illustrations associated with the media assets of the media asset group; and associating the media asset group illustration to the media asset group.

As a method for creating a group of media assets to be made available on an on-line media asset store, another embodiment of the invention includes at least the acts of: creating a proposed media asset group for a plurality of media assets; processing the proposed media asset group to produce a validated media asset group that references only those of the media assets determined to be available at a network media server; producing a media asset illustration for association to the validated media asset group; and associating the produced media asset illustration to the validated media asset group.

As a computer readable medium including at least computer program code for creating a group of media assets to be made available on an on-line media asset store, one embodiment of the invention includes at least: computer program code for receiving a proposed media asset group for a plurality of media assets, at least a plurality of the media assets having an media asset illustration associated therewith; computer program code for producing a media asset group illustration based on two or more of the media asset illustrations associated with the media assets of the media asset group; and computer program code for associating the media asset group illustration to the media asset group.

As a method for rating media asset groups available on an on-line media asset store, one embodiment of the invention includes at least the acts of: causing a media asset group to be displayed for a user, the media asset group pertaining to a plurality of media assets; receiving a user rating indication; and updating a media asset group rating in accordance with the user rating.

Other aspects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The invention will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

**FIG. 1** is a block diagram of a media purchase system according to one embodiment of the invention.

**FIG. 2A** is a diagram of a media asset (i.e., digital media asset) according to one embodiment of the invention.

**FIG. 2B** is a block diagram of a media asset group according to one embodiment of the invention.

**FIG. 3A** is a flow diagram of a client-side media asset group publication process according to one embodiment of the invention.

**FIG. 3B** is a flow diagram of a server-side media asset group publication process according to one embodiment of the invention.

**FIG. 4A** is a flow diagram of a media asset group illustration creation process according to one embodiment of the invention.

**FIG. 4B** is a flow diagram of a media asset group illustration creation process according to another embodiment of the invention.

**FIGS. 4C-4E** are mosaic creation fill pattern examples according to various embodiments of the invention.

**FIGS. 5A-5F** are exemplary screen shots demonstrating a media asset group process using a media management application.

**FIG. 6A** is a flow diagram of a rating process according to one embodiment of the invention.

**FIG. 6B** illustrated a screen shot of a media asset groups being listed on an on-line media store.

**FIG. 6C** is a visual representation of an exemplary a decayed average calculation.

**FIG. 7** shows an exemplary computer system suitable for use with the invention.

**DETAILED DESCRIPTION OF THE INVENTION**

The invention pertains to improved techniques to create, browse, rate and/or purchase media asset groups. Media assets groups can be created by various users and published to a digital assets manager. Thereafter, the media asset groups can be finalized and made available for on-line purchase. Once the media asset groups are made available for on-line purchase, users can browse, rate and/or purchase the media asset groups at an on-line media store. One example of a media asset group (group of media items) is known as a playlist, which can pertain to a group of audio tracks. Note that the media asset group (e.g., playlist) identifies media assets that are within the media asset group, but does not include the media assets themselves.

One aspect of the invention pertains to creation of media asset groups of media assets that can be made available at an on-line media store. Another aspect of the invention is the ability to process a created media asset group to ensure appropriate availability of each of the constituent media assets of the media asset group. Still another aspect of the invention pertains to creating media asset group illustrations (e.g., mosaics) to be used with corresponding media asset groups. Yet still another aspect of the invention is the ability to enable users of an on-line media store to rate media asset groups that have been made available.

Embodiments of the invention are discussed below with reference to **FIGS. 1-7**. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments.
[0034] FIG. 1 is a block diagram of a media purchase system 100 according to one embodiment of the invention. The media purchase system 100 includes a media store server 102 that hosts an on-line media store. The media store server 102 can off-load commerce transactions and/or delivery of purchased digital media assets to other users, if desired. As shown in FIG. 1, the media purchase system 100 includes one or more client devices 104 for use by end users. The client devices 104 couple to a data network 106. Additionally, the media store server 102 also couples to the data network 106. In one implementation, the data network 106 can refer to one or more data networks, typically, high data-bandwidth networks, namely, wired networks, such as the Internet, Ethernet, gigabit Ethernet, and fiber optic, as well as wireless networks such as IEEE 802.11(a), (b) or (g) (WiFi), IEEE 802.16 (WiMax), and Ultra-Wide Band (UWB).

[0035] A computer program 108, typically a media management application (MMA) or other media player application, runs on the client device 104. One example of a media management application is the iTunes® application, produced by Apple Computer, Inc. of Cupertino, Calif. The client devices 104 are, in general, computing devices. As an example, the client devices 104 can be specific or general-purpose personal computers or portable media players. One example of a portable media player suitable for use with the invention is the iPod®, also produced by Apple Computer, Inc. The computer program 108 can be used by a consumer for a variety of purposes, including, but not limited to, browsing and/or purchasing media assets from the on-line media store provided by the media store server 102, creating and sharing media asset groups (e.g., playlists), organizing media assets, presenting/playing media assets, and transferring media assets between client devices 104.

[0036] The media purchase system 100 can also includes one or more client devices 110 for use by media programmers. The client devices 110 also run a computer program 112, typically a media management application (MMA) or other media player application. The computer program 112 can be the same as the computer program 108, though the computer program 112 might offer additional functionality for support of the media programmer. As an example, the media programmer uses the computer program 112 to create and share professionally design media asset groups (e.g., playlists).

[0037] The media purchase system 100 also includes a digital asset manager 114. The digital asset manager 114 is coupled to a media assets database 116. The media assets database 116 stores media asset information including metadata relating to digital media assets available for purchase at the on-line media store. The metadata can pertain to individual media assets (digital media assets) or media asset groups (digital media asset groups). Media assets can include, but are not limited to, music, video, text, and/or graphics files. In the case of music, a media asset group can be a playlist for the music. One specific example of a type of digital media asset group is referred to as an iMix™, which is a published playlist currently available for browsing and/or purchase on Apple Computer’s iTunes® Music Store. Another specific example of a type of digital media asset group is referred to as an iEssential™, which is a published playlist created by a media programmer and currently available for browsing and/or purchase on Apple

[0038] The media store server 102 enables the user of a particular client device 104 to purchase media assets (e.g., songs, videos, albums). Subsequently, the client device 104 can download the purchased media assets from the media store server 102, or some other server, via the data network 106. As will be understood by those familiar with data networks, other network configurations are possible. Furthermore, while the media store server 102 and the digital asset manager 114 are shown as individual and separate devices, it will be understood by those familiar with the art that other configurations are possible. As one example, each device can be implemented such that is distributed over multiple server computers. As another example, these various servers and/or managers can be implemented by a single physical server computer.

[0039] FIG. 2A is a diagram of a media asset 200 (i.e., digital media asset) according to one embodiment of the invention. The media asset 200 shown is an audio file (i.e., song file), for example an MP3 or MC file, although any media file type may be used.

[0040] The media asset 200 contains one or more data segments including a data segment containing media content 206, a data segment containing media information 208, and a data segment containing a media asset illustration 204. In one embodiment, the media content 206 pertains to a song, and the media information 208 is song information, which typically includes song name, artist name, and album name, as well as other publication information. Further, the media asset illustration 204 can be an image of an album cover associated with the media asset 200. In one implementation, the media asset illustration 204 is an image of a poster, photograph, or promotional material associated with the media asset 200.

[0041] FIG. 2B is a block diagram of a media asset group 250 according to one embodiment of the invention. The media asset group contains metadata, typically identifying information such as title, author/artist, etc., and pointers 252 to one or more media assets 254, for example for the type described in reference to FIG. 2A. In one example of a media asset group, the media asset group 250 contains a collection of songs gathered by an individual, along with explanatory or expository text and one or more images or illustrations.

[0042] The media asset group 250 also includes a data segment containing media asset group information (e.g., user comments) 256 and a data segment containing one or more media asset illustrations 258 associated with the media asset group 250. The media asset illustrations 258 can be associated with one or more of the media assets 252 or can be a media asset illustration associated with the media asset group 250. The media asset illustration 258 can be, for instance, a collage or mosaic of one or more media asset illustrations associated with the media assets of the media asset group 250.

[0043] FIG. 3A is a diagram of a client-side media asset group publication process 300 according to one
embodiment of the invention. The client-side media asset group publication process 300 is performed, for example, at a client. For example, the client can refer to a media management application operating on a client computer. One example of a music management program is the iTunes® client application, produced by Apple Computer, Inc. of Cupertino, Calif. Eventually, media asset groups being processed by the client-side media asset group publication process 300 become available on an on-line media store. One example of an on-line media store is the iTunes® Music Store, operated by Apple Computer, Inc.

The client-side media asset group publication process 300 begins with creation 302 of a proposed media asset group (e.g., a playlist of songs). The proposed media asset group may be created manually by a user selecting individual media assets from a media asset source (e.g., an on-line media store or a library of music files), or generated automatically using specified criteria such as user ratings, artist name, or media genre. Next, a decision 304 determines if a publication request has been made. A publication request can be made, for example, by operating a “publish” control in a media management application (e.g., selecting a “publish” button).

If the decision 304 determines that a publication request has been made (by a submitter), then the proposed media asset group is submitted 306 to a digital media manager. The digital media manager can be, for example, the digital media manager 114 of FIG. 1. Next, a decision 308 determines if a validated media asset group has been received. Subsequently, once a validated media asset group has been received, the validated media asset group is displayed 310 for the submitter of the proposed media asset group. Typically, the validated media asset group serves to inform the submitter of the proposed media asset group which, if any, of the media assets in the proposed media asset group are available for purchase at a particular on-line media store.

Once the validated media asset group has been received, the submitter can be given the option to add or edit information (e.g., user comments) and/or illustrations (e.g., images) to be associated with the media asset group. In one embodiment, the validated media asset group includes a mosaic of media asset illustrations associated with one or more of the available media assets within the validated media asset group. Additionally, the validated media asset group can include instructions (e.g., XML or PostScript®) directing the requesting client to display the information or illustrations in a particular format.

Next, a decision 312 determines whether the validated media asset group has been accepted. The user (submitter), for example, may select an “accept” control in a media management application to indicate acceptance of the validated media asset group (e.g., selecting an “submit” or “accept” button). If the validated media asset group has been accepted, the validated media asset group is submitted 314 and the client-side media asset group publication process 300 ends. If, on the other hand, the decision 312 determines that the validated media asset group has not been accepted, then the client-side media asset group publication process 300 returns to repeat block 302 and subsequent blocks, thereby allowing the user (submitter) to create a new or modified proposed media asset group for publication.

FIG. 3B is a flow diagram of a server-side media asset group publication process 350 according to one embodiment of the invention. In one embodiment of the invention, the server-side media asset group publication process is performed using the digital asset manager of the media purchase system 100 of FIG. 1.

The server-side media asset group publication process 350 begins with a decision 352 that determines if a proposed media asset group has been received. The proposed media asset group can be a proposed media asset group as submitted 206 in FIG. 3A. Next, the media assets in the proposed media assets are identified 354. This identification 354 can be performed by the digital asset manager 114 of FIG. 1. The identification 354 of the media assets can permit some leeway for typographical errors or misidentifications of the media assets in the proposed media asset group (e.g., a title misspelling or improper artist attribution). In one implementation, the identification 354 is performed with the aid of a list of common misspellings and/or misattributions.

Next, the availability of the identified media assets in the proposed media asset group is determined 356. The determination 356 can be accomplished by checking whether the identified media assets are contained within list or database containing information about media assets that are available for purchase. In one implementation, the availability can depend on a particular on-line media store where the manager 114 of FIG. 1. Next, the digital asset manager 114 of FIG. 1. Note that the availability of media assets can depend on a variety of factors. For example, one or more media assets may not be available in a particular country. It is also possible that one or more media assets in the media asset group may be temporarily or permanently unavailable due to corrupted or missing digital media files.

Once the availability of the media assets has been determined 356, a validated media asset group is created 358. The validated media asset group includes at least the media assets in the proposed media asset group that are available for purchase. In one implementation, the validated media asset group does not list the media assets in the media asset group that are unavailable. In another implementation, the unavailable media assets are shown, but designated as permanently or temporarily unavailable. In still another implementation, unavailable media assets that are expected to become available in the near future are displayed along with available media assets.

Next, the validated media asset group is sent 360 to the requesting client for approval. Besides the list of media assets, the validated media asset group can include one or more images, text, and/or layout information. In one implementation, the validated media asset group is sent along with information (e.g., XML, HTML, PostScript®) directing the requesting client to display the additional text and images in a particular layout using, for example, a media management application or web browser at the requesting client. Using such information, the requesting client can render the validated media asset group as well as render a media asset
group illustration (discussed below) associated therewith. In another implementation, the media asset group illustration can be rendered at a server and delivered to the requesting client, such that the burden of rendering the media asset group illustration is off-loaded from the requesting client.

[0053] The server-side media asset group publication process 350 continues with a decision 362, which waits for acceptance of the validated media asset group. This acceptance can correspond to the acceptance as described above in reference to submission 314 operation of FIG. 3A. If the decision determines 362 that the validated media asset group has been accepted, then the validated media asset group is published 364 and the server-side media asset group publication process 350 ends. In one implementation, the publication 364 makes the media assets in the validated media asset group available for purchase from an on-line media store. For example, an on-line media store might display the media assets in the validated media asset group as a compilation or collection in the on-line media store. Additionally, the on-line media store could further display text and/or illustrations pertaining to the validated media asset group. Examples of published media asset groups can be noted as iMixes™ or iEssentials™, which are available from the iTunes® Music Store.

[0054] FIG. 4A is a flow diagram of a media asset group illustration creation process 400 according to one embodiment of the invention. The media asset illustration creation process 400 is associated with producing a media asset illustration for a media asset group. In one implementation, the media asset illustration is a mosaic that can be created by using one or more media asset illustrations from media assets in the media asset group. For example, a media asset illustration for a media asset group containing music files can be a mosaic of album cover art associated with the music files.

[0055] The media asset group illustration creation process 400 begins by obtaining 402 one or more images associated with media assets within a media asset group. For example, a media asset group may contain several music files (i.e., audio tracks), each with an associated album cover image. Typically, the media asset group will include a plurality of media assets; hence, a plurality of images are associated with the media asset group. Next, a mosaic fill pattern is determined 404. This determination can be based on a wide variety of criteria, such as the number of images obtained 402, the order of the media assets within the media asset group, and/or user preferences. In one implementation, the mosaic has a grid-like arrangement of different images. For example, the different images used within the mosaic can pertain to some or all of the images obtained 402 or variations thereof. Once the mosaic fill pattern is determined 404, a mosaic is created 406 by arranging the different images according to the determined mosaic fill pattern. After the mosaic has been created 406, the media asset group illustration creation process 400 ends.

[0056] FIG. 4B is a flow diagram of a media asset group illustration creation process 450 according to another embodiment of the invention. The media asset group illustration creation process 450 can represent a more detailed embodiment than the media asset group illustration creation process 400 illustrated in FIG. 4A. The media asset illustration creation process 450 is associated with producing a media asset illustration for a media asset group. In another implementation, the media asset illustration is a mosaic that can be created by using one or more media asset illustrations from media assets in the media asset group. For example, a media asset illustration for a media asset group containing music files can be a mosaic of album cover art associated with the music files.

[0057] The media asset group illustration creation process 450 begins by obtaining 452 one or more images associated with media assets in a media asset group. For example, a media asset group may contain several music files, each with an associated album cover image. Next, image priority is determined 454. Prioritization can be based on a wide variety of criteria. For example, an image associated with more than one media asset in a media asset group can be given a higher priority than an image associated with only one media asset. As another example, image priority can be determined by looking at the order of the media assets in the media asset group, such that the first media asset in the media asset group has the highest priority.

[0058] Next, transparency is applied 456 to the image determined 454 to have the highest priority. According to one implementation, the highest priority image is processed such that it has approximately 75% transparency. However, any value of transparency can be used. Next, a mosaic fill pattern is determined 458 based on the number of media assets in the media asset group. Alternately, a random pattern or user-generated pattern can be used to determine a mosaic fill pattern. Once the mosaic fill pattern has been determined 458, a mosaic is created 460 by arranging one or more of the obtained images over the transparent image. In one example, the transparent image is used as a background image for the mosaic, and then some or all of the obtained images are used to fill portions of the mosaic in accordance with the image priority. After the mosaic has been created 460, the media asset group illustration creation process 450 ends.

[0059] As noted above, a media asset group illustration (e.g., mosaic) can be created and used in association with a media asset group. The media asset group illustration can be created in accordance with a fill pattern, which includes a layout and a fill order. The layout identifies a plurality of regions of the media asset group illustration that are to receive individual image. The fill order is used to determine which of a plurality of images associated with media assets of the media asset group are to be used in the plurality of regions of the media asset group illustration. The images used within the media asset group illustration can be static or dynamic. For example, in the dynamic case, the images could be switch, spin or rotated periodically, with or without use of transition effects. Still further, during a creation process, a user can be permitted to edit a proposed media asset group illustration. For example, a user could drag and drop different ones of the associated images into different positions of the media asset group illustration.

[0060] Additionally, the media assets group illustration can make use of primary colors of one or more of the associated images to determine and utilize a compatible color. Additional details on determining and using compatible colors as well as creating mosaics or collages are contained in U.S. patent application Ser. No. 11/078,583, filed Mar. 11, 2005, and entitled "AUTOMATED CREATION OF MEDIA ASSET ILLUSTRATION COLLAGE."
FIGS. 4C-4E are mosaic creation fill pattern examples according to various embodiments of the invention. These fill patterns are intended to be exemplary only. It is understood that many other fill patterns, including those incorporating other shapes (e.g., circles or hexagons), and those utilizing different relative image sizes are possible. Additionally, mosaics may be dynamic, i.e., mosaics may change over time, such as by swapping or animating images. For example, in cases where there are too many images to fit into a mosaic pattern, the various positions in these mosaic patterns may cycle through a set of images.

FIG. 4C illustrates exemplary mosaics constructed from one to four images. These mosaics can, for example, be created in accordance with the media asset group illustration creation process 400 illustrated in FIG. 4A. Part (a) shows four different images pertaining to media assets of a media asset group. These images can represent, for example, four different album covers for music files. These images are arranged left-to-right in their order of priority. Next, part (b) shows a mosaic fill pattern. Each number, 1-4, represents a position in the mosaic. Finally, part (c) shows four resulting exemplary mosaics for one, two, three and four image mosaics.

FIG. 4D illustrates exemplary mosaics constructed from five to nine images. These mosaics can, for example, be created in accordance with the media asset group illustration creation process 400 illustrated in FIG. 4A. Part (a) shows nine different images pertaining to media assets of a media asset group. These images can represent, for example, nine different album covers for music files. These images are arranged left-to-right in their order of priority. Next, part (b) shows a mosaic fill pattern. Each number, 1-9, represents a position in the mosaic. Finally, part (c) shows nine resulting exemplary mosaics for five, six, seven, eight, and nine images.

FIG. 4E illustrates exemplary mosaics constructed from five or six images. These mosaics can, for example, be created in accordance with the media asset group illustration creation process 450 illustrated in FIG. 4B. Part (a) shows six different images pertaining to media assets of a media asset group. These images can represent, for example, six different album covers for music files. These images are arranged left-to-right in their order of priority. Part (b) shows the first image with 0% transparency and with 75% transparency applied. The first image with 75% transparency is applied as a background image for the mosaic. Next, part (c) shows a mosaic fill pattern superimposed over the transparent image. Each number, 1-6, represents a position in the mosaic. Part (d) shows two mosaics, where images have been placed over the transparent image, demonstrating fill patterns for five and six images. Note the first mosaic of five images has no specific image in the 6th position of the mosaic. Hence, the 6th position merely contains that portion of the 75% transparent first image, which provides a background image, that corresponds to the 6th position.

FIGS. 5A-5F are exemplary screen shots demonstrating a media asset group process using a media management application. These screen shots roughly correspond to steps in the client-side media asset group publication process 300 of FIG. 3A. The media asset group can be referred to as an iMix®, and the media management application can refer to iTunes®.

FIG. 5A is a screen shot of an application window 500 demonstrating a first step of a media asset group creation process. The screen shot of the application window 500 can correspond to block 302 in FIG. 3A. Shown in FIG. 5A is a media asset group 506, a media asset group title 502 (‘A-Playlist’), and a media asset group publication request control 504. The media asset group 506 is represented as a list of media assets. In this example, the media asset group 506 includes a list of ten media assets, namely, songs. The media asset group can correspond to the proposed media asset group of FIGS. 3A and 3B. A user can start the media asset group creation process by selecting the media asset group publication request control 504 can correspond with block 304 in FIG. 3A.

FIG. 5B is a screen shot of an application window 510 demonstrating a second step of a media asset group creation process. The screen shot shows a user login screen, which allows a user to access an on-line media store (e.g., media storefront).

FIG. 5C is a screen shot of an application window 520 demonstrating a third step of a media asset group creation process. In this step, a media asset group 526 is displayed. The media asset group 526 can correspond to the validated media asset group of FIG. 3A and 3B. More particularly, the displaying of the media asset group within the application window 520 can correspond to operation 308 of FIG. 3A. In this example, the media asset group 526 includes a list of the same ten media assets, namely, songs, as the media asset group 506 in FIG. 5A. In this particular example, all ten media assets from the media asset group 506 are available from the on-line media store; hence, the media asset group 526 includes the same ten media assets. However, the media asset group 526 can include less than the same ten media assets as the media asset group when one or more of the ten media assets are not available from the on-line media store. A mosaic 528 is also depicted in the application window 520. In the particular mosaic 528 illustrated in FIG. 5C, the media asset group only includes two associated images (i.e., album covers). Hence, the mosaic 528 includes the first and second images in two positions of the grid, and a largely translucent first image as a background in the remaining two positions. Additionally, text boxes 522 and 524 are shown. The text box 522 allows a user to enter a title for the media asset group. The text box 524 allows a user to enter descriptive information to describe the media asset group. If the user is satisfied with the media asset group and has entered a title and/or descriptive information, the user may operate a media asset group approval control 530. For example, the media asset group approval control 530 can be a “Publish” button that a user can select. Operation of the media asset group approval control 530 can correspond with block 312 of FIG. 3A.

FIG. 5D is a screen shot of an application window 520 demonstrating a third step of a media asset group creation process. The application window 520 is generally the same as the application window 520 illustrated in FIG. 5C. However, in FIG. 5D, the mosaic 528 includes two associated images (i.e., album covers). Hence, the mosaic 528 includes the first and second images in two positions of the grid, and a largely translucent first image as a background in the remaining two positions.
FIG. 5E is a screen shot of an application window demonstrating a fourth step of a media asset group creation process. At this point, the media asset group has been published and has become available at an on-line media store for consumers to browse. This screen shot serves as a confirmation to a user that their media asset group has been published and is available on the on-line media store. The screen shot also informs the user how the media asset will be illustrated on the on-line media store. Additionally, the screen shot includes a rating area 532 that allows a user (creator or browser) to rate the associated media asset group. In this example, the user selects a rating (e.g., via a radio button) and then operates a rating control 534 (e.g., "Submit" button). Hence, even the user who created the media asset group is able to rate his or her own media asset group.

According to one embodiment of the invention, a decay factor is used to minimize the effect of old or "stale" ratings. For instance, old ratings can decay exponentially, according to an exponential decay equation, similar to a

FIG. 6B illustrated a screen shot of a media asset groups being listed on an on-line media store. In this example, the screen shot pertains to an application window having Mixes displayed along with their current user rating. Note that the media asset group ratings 608 are also depicted proximate to their associated media asset groups. Mini-mosaics 610 and 612 are also depicted in the application window shown in FIG. 6B. For example, the mini-mosaics 610 and 612 can be generated as a regular mosaic for a media asset group but limits the number of images that are included. In this example, the mini-mosaics 610 and 612 are limited to four images, arranged in a 2x2 grid. In the particular mini-mosaic 610 illustrated in FIG. 6B, the media asset group only includes two associated images (i.e., album covers). Hence, the mini-mosaic 610 includes the first and second images in two positions of the grid, and a largely translucent first image as a background in the remaining two positions. In the mosaic 612, the media asset group might include two or more associated images, but not more than four images would be presented in the 2x2 grid. Typically, the mini-mosaics 610 and 612 would be displayed when the overall size of the mosaic to be displayed is limited, even though the regular mosaic would include more images, such provides a better illustration of the mosaic (less images presented) given the confined size.

In another implementation the updated media asset group rating can be a decayed average rating. Here, the update 606 of the update process 600 to the media asset group rating can be calculated using a decayed average rating. The decayed average rating calculation can utilize, for example, an exponential decay function, updated daily, hourly, or continuously.

For instance, old ratings can decay exponentially, according to an exponential decay equation, similar to a
In a half-life calculation, the value halved over a specific period of time. As subsequent time periods pass, the value is halved repeatedly. Thus, taking a value of 100 and assigning a half life of one day, the value will be 50 on day two, 25 on day three, 12.5 on day four, etc. Using this concept, and applying basic mathematical principles, a weighted average rating can be calculated such that any particular rating has one half of its original weight after 30 days, one quarter of its original weight after 60 days, etc. In general, for m ratings, each having v\textsubscript{k} votes, with each rating t\textsubscript{k} being t\textsubscript{k} days old, and a decay factor of D, the average weighted rating R\textsubscript{w} is:

\[
R_{w} = \sum_{k=1}^{m} \frac{v_{k} \times D^{t_{k}}}{\sum_{k=1}^{m} v_{k} \times D^{t_{k}}}
\]

If it desired that a rating decays such that it is has one-half of its initial significance (weight) after 30 days, the decay factor D is:

\[
D = \sqrt{\frac{1}{2}} = 0.97716 \text{day}^{-1}
\]

FIG. 6C is a visual representation of an exemplary decayed average calculation applying equations (1) and (2) to a series of ratings varying in age from 0 to 120 days. For simplicity, only five days of ratings are shown, and no other votes are shown during the remainder of the time period. In this particular example, 20 votes are cast on each day. On day t\textsubscript{1}, 20 votes are cast, having an average rating of five stars. On day t\textsubscript{2}, 30 days later, 20 votes are cast, averaging four stars. Similarly, every 30 days, 20 votes are cast on days t\textsubscript{3}, t\textsubscript{4}, and t\textsubscript{5}. The average ratings for each day are three, two, and one stars, respectively. This is meant to simulate a decrease in ratings over time, from an average rating of five stars at t\textsubscript{1}, to a average rating of one star on day t\textsubscript{5}. Using the above equations, at time t\textsubscript{3}, 120 days after time t\textsubscript{1}, the decayed average rating is 1.83 stars. For comparison, a non-weighted average rating, R, calculated over the same time period, using the formula:

\[
R = \frac{\sum_{k=1}^{m} v_{k}}{\sum_{k=1}^{m} 1}
\]

yields an average rating of 3.00 stars. It can be seen that, in the weighted rating, the newer ratings have more weight, which is believed to more accurately reflect the current public opinion of the media asset group. It is understood that the above is for exemplary purposes only and that a myriad of other decayed rating schemes may be used.

FIG. 7 shows an exemplary computer system 725 suitable for use with the invention. Computer system 725 includes a display monitor 728 having a single or multi-screen display 730 (or multiple displays), cabinet 732, keyboard 734, and mouse 736. Cabinet 732 houses a drive 738, such as a CD-ROM or floppy drive, system memory and a hard drive (not shown) which may be utilized to store and retrieve software programs incorporating computer code that implements some or all aspects of the invention, data for use with the invention, and the like. Although CD-ROM 740 is shown as an exemplary computer readable storage medium, other computer readable storage media including floppy disk, tape, flash memory, system memory, and hard drive may be utilized. Additionally, a data signal embodied in a carrier wave (e.g., in a network) may be the computer readable storage medium. In one implementation, an operating system for the computer system 725 is provided in the system memory, the hard drive, the CD-ROM 740 or other computer readable storage medium and serves to incorporate the computer code that implements some or all aspects of the invention.

Although the media assets (or media items) of emphasis in several of the above embodiments were audio items (e.g., audio files or audio tracks), the media assets are not limited to audio items. For example, the media assets can alternatively pertain to videos (e.g., movies) or images (e.g., photos). Also, in one implementation, the audio files or audio tracks can pertain to songs or audiobooks.

The various aspects, embodiments, implementations or features of the invention can be used separately or in any combination.

The invention can be implemented by software, hardware or a combination of hardware and software. The invention can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that can store data which can thereafter be read by a computer system. Examples of the computer readable medium include read-only memory, random-access memory, CD-ROMs, DVDs, magnetic tape, optical data storage devices, and carrier waves. The computer readable medium can also be distributed over networked computer systems so that the computer readable code is stored and executed in a distributed fashion.

The advantages of the invention are numerous. Different aspects, embodiments or implementations may yield one or more of the following advantages. One advantage of the invention is that media asset groups can be created and published with greater ease. Another advantage of the invention is that mosaics for submitted media assets groups can be automatically generated. Still another advantage of the invention is that users can rate published media asset groups.

The many features and advantages of the present invention are apparent from the written description and, thus, it is intended by the appended claims to cover all such features and advantages of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, the invention should not be limited to the exact construction and operation as illustrated and described. Hence, all suitable modifications and equivalents may be resorted to as falling within the scope of the invention.
What is claimed is:

1. A method for creating a group of media assets to be made available on an on-line media asset store, said method comprising:

(a) obtaining a proposed media asset group for a plurality of media assets, at least a plurality of the media assets having an media asset illustration associated therewith;

(b) producing a media asset group illustration based on two or more of the media asset illustrations associated with the media assets of the media asset group; and

(c) associating the media asset group illustration to the media asset group.

2. A method as recited in claim 1, wherein the media asset group illustration is a mosaic.

3. A method as recited in claim 1, wherein said producing (b) comprises:

(b1) determining a fill pattern for the media asset group illustration; and

(b2) creating the media asset group illustration by arranging the two or more of the media asset illustrations according to the fill pattern, wherein each of the two or more media asset illustrations represents only a part of the media asset group illustration.

4. A method as recited in claim 3, wherein said determining (b1) determined the fill pattern based on the number of the media asset illustrations associated with the media assets of the media asset group.

5. A method as recited in claim 1, wherein said producing (b) comprises:

(b1) determining a fill pattern for the media asset group illustration, the fill pattern being dependent on the number of the media asset illustrations associated with the media assets of the media asset group;

(b2) determining a number of the media asset illustrations to be included in the fill pattern;

(b3) prioritizing the media asset illustrations;

(b4) selecting the number of the media asset illustrations from the two or more of the media asset illustrations based on the prioritization; and

(b5) creating the media asset group illustration by arranging the selected media asset illustrations according to the fill pattern, wherein each of the selected media asset illustrations represents only a part of the media asset group illustration.

6. A method as recited in claim 5, wherein the fill pattern has a fill order, and wherein the selected media asset illustrations are inserted into the media asset group illustration in accordance with the fill order, with the highest priority one of the selected media asset illustration being first inserted into the media asset group illustration.

7. A method as recited in claim 6, wherein when the number of the media asset illustrations to be included in the fill pattern exceeds the media asset illustrations, remaining opening in the fill pattern are open.

8. A method as recited in claim 6, wherein when the number of the media asset illustrations to be included in the fill pattern exceeds the media asset illustrations, remaining openings in the fill pattern contain some portion of a partially translucent version of at least one of the media asset illustrations.

9. A method as recited in claim 6, wherein a color to be applied to some portion of the media asset group illustration can be automatically from one or more of the media asset illustrations associated with the media assets of the media asset group.

10. A method as recited in claim 5, wherein when the number of the media asset illustrations to be included in the fill pattern exceeds the media asset illustrations, remaining opening in the fill pattern are open.

11. A method as recited in claim 5, wherein when the number of the media asset illustrations to be included in the fill pattern exceeds the number of the media asset illustrations, any remaining opening in the fill pattern contains some portion of a partially translucent version of at least one of the media asset illustrations.

12. A method as recited in claim 5, wherein a color to be applied to some portion of the media asset group illustration can be automatically from one or more of the media asset illustrations associated with the media assets of the media asset group.

13. A method as recited in claim 1, wherein said producing (b) comprises:

(b1) determining a fill pattern for the media asset group illustration, the fill pattern being dependent on the number of the media asset illustrations associated with the media assets of the media asset group;

(b2) determining a number of the media asset illustrations to be included in the fill pattern;

(b3) prioritizing the media asset illustrations;

(b4) selecting the number of the media asset illustrations from the two or more of the media asset illustrations based on the prioritization; and

(b5) creating the media asset group illustration by (i) applying a partially translucent version of one of the selected media asset illustrations to the media asset group illustration as a background image, and (ii) arranging the selected media asset illustrations according to the fill pattern, wherein each of the selected media asset illustrations represent only a part of the media asset group illustration.

14. A method as recited in claim 13, wherein when the number of the media asset illustrations to be included in the fill pattern exceeds the number of the media asset illustrations, any remaining opening in the fill pattern contains some portion of the partially translucent version of the one of the selected media asset illustrations.

15. A method as recited in claim 13, wherein the fill pattern has a fill order, and wherein the selected media asset illustrations are inserted into the media asset group illustration in accordance with the fill order, with the highest priority one of the selected media asset illustration being first inserted into the media asset group illustration.

16. A method for creating a group of media assets to be made available on an on-line media asset store, said method comprising:

creating a proposed media asset group for a plurality of media assets;
processing the proposed media asset group to produce a validated media asset group that references only those of the media assets determined to be available at a network media server;

producing a media asset illustration for association to the validated media asset group; and

associating the produced media asset illustration to the validated media asset group.

17. A method as recited in claim 16, wherein the produced media asset illustration is a mosaic.

18. A method as recited in claim 16, wherein said producing comprises:

determining a fill pattern for the produced media asset illustration; and

creating the produced media asset illustration by arranging the two or more of the media asset illustrations according to the fill pattern, wherein each of the two or more media asset illustrations represents only a part of the produced media asset illustration.

19. A method as recited in claim 18, wherein said determining determines the fill pattern based on the number of the media asset illustrations associated with the media assets of the media asset group;

20. A computer readable medium including at least computer program code for creating a group of media assets to be made available on an on-line media asset store, said computer readable medium comprising:

computer program code for receiving a proposed media asset group for a plurality of media assets, at least a plurality of the media assets having a media asset illustration associated therewith;

computer program code for producing a media asset group illustration based on two or more of the media asset illustrations associated with the media assets of the media asset group; and

computer program code for associating the media asset group illustration to the media asset group.

21. A computer readable medium as recited in claim 20, wherein the media asset group illustration is a mosaic.

22. A computer readable medium as recited in claim 20, wherein said computer readable medium further comprises:

computer program code for rendering the media asset group with the associated media asset group illustration available for browsing and purchasing on an on-line media store.

23. A computer readable medium as recited in claim 20, wherein said computer program code for producing comprises:

computer program code for determining a fill pattern for the media asset group illustration; and

computer program code for creating the media asset group illustration by arranging the two or more of the media asset illustrations according to the fill pattern, wherein each of the two or more media asset illustrations represents only a part of the media asset group illustration.

24. A computer readable medium as recited in claim 23, wherein said computer program code for determining determines the fill pattern based on the number of the media asset illustrations associated with the media assets of the media asset group.

25. A method for rating media asset groups available on an on-line media asset store, said method comprising:

(a) causing a media asset group to be displayed for a user, the media asset group pertaining to a plurality of media assets;

(b) receiving a user rating indication; and

(c) updating a media asset group rating in accordance with the user rating.

26. A method as recited in claim 25, wherein said updating (c) of the media asset group rating imposes a decay factor to discount older user ratings.