Nos. 2016-2502, -2505, -2506, -2507

United States Court of Appeals for the Federal Circuit

INTERVAL LICENSING LLC,

Plaintiff-Appellant,

v.

AOL, INC., APPLE, INC.,
GOOGLE INC., YAHOO!, INC.,

Defendants-Appellees.

APPEALS FROM THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF WASHINGTON IN CASE NOS. 2:13-CV-00263-MJP, 2:13-CV-00264-MJP, 2:13-CV-00265-MJP, 2:13-CV-00266-MJP, JUDGE MARSHA J. PECHMAN.

BRIEF FOR PLAINTIFF-APPELLANT INTERVAL LICENSING LLC

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CERTIFICATE OF INTEREST

Counsel for Interval Licensing LLC certifies the following:

1. The full name of every party or *amicus* represented by us is:

   Interval Licensing LLC

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by us is:

   Interval Licensing LLC

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party represented by us are:

   None

4. The names of all law firms and the partners or associates who appeared for the party now represented by us in the trial court or are expected to appear in this Court are:

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Dated: December 16, 2016

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STATEMENT OF RELATED CASES

Four appeals were consolidated into the present appeal: *Interval Licensing LLC v. AOL, Inc.* (No. 16-2502); *Interval Licensing LLC v. Apple, Inc.* (No. 16-2505); *Interval Licensing LLC v. Google Inc.* (No. 16-2506); and *Interval Licensing LLC v. Yahoo!, Inc.* (No. 16-2507).

Four (consolidated) appeals relating to the same underlying action were previously before this court (hereinafter, "First Consolidated Appeal"): *Interval Licensing LLC v. AOL, Inc.* (No. 13-1282); *Interval Licensing LLC v. Apple, Inc.* (No. 13-1283); *Interval Licensing LLC v. Google Inc.* (No. 13-1284); and *Interval Licensing LLC v. Yahoo!, Inc.* (No. 13-1285). A panel of this Court consisting of Circuit Judges Taranto, Chen, and Rader[1] heard argument on January 6, 2014. Circuit Judges Taranto and Chen issued a decision on September 10, 2014. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364 (Fed. Cir. 2014).

Due to a complicated procedural history (including severance, consolidation, stay pending reexamination, and a partial lifting of that stay), there are four cases pending at the Western District of Washington that may be nominally affected by the outcome of this appeal. The chronology that follows explains the related cases.

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[1] Former Chief Judge Rader retired before the opinion issued and did not participate in the decision.

This litigation began on August 27, 2010, when Interval Licensing LLC ("Interval") filed one case in the Western District of Washington (Case No. 2:10-cv-1385) in which it asserted four patents—U.S. Patent Nos. 6,034,652 (which is at issue in this appeal); 6,788,314; 6,263,507; and 6,757,682. The complaint named as defendants, *inter alia*, the four Defendants–Appellees here: AOL, Inc.; Apple, Inc.; Google Inc.; and Yahoo!, Inc. (collectively, "Defendants–Appellees" or "Defendants").

The district court (Pechman, J.) divided the original case into two "tracks": a first track consisting of Interval's claims for infringement of the '652 and '314 patents against Defendants–Appellees, and a second track containing Interval's claims for infringement of the '507 and '682 patents against Defendants–Appellees plus seven other defendants (not at issue in this appeal). *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 178 (W.D. Wash. Feb. 16, 2011).

The district court then reorganized the case by defendant. It severed the original case into separate docket numbers for each defendant (including both tracks). The cases against Defendants–Appellees are: AOL, Inc. (Lead Case, No. 2:10-cv-1385); Apple, Inc. (Case No. 2:11-cv-708); Google Inc. (Case No. 2:11-cv-711); and Yahoo!, Inc. (Case No. 2:11-cv-716). The Court then consolidated the cases for pretrial

matters pursuant to Federal Rule of Civil Procedure 42(a). *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 229 (W.D. Wash. Apr. 29, 2011).

Early in the litigation, reexamination requests were filed and granted at the United States Patent & Trademark Office ("PTO") for each of the four asserted patents. The district court stayed the four cases pending the outcome of the reexaminations. *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 253 (W.D. Wash. June 16, 2011). After the examiner confirmed the patentability of the asserted claims in the reexaminations of the '652 (*ex parte*) and '314 patents (*inter partes*), the district court lifted the stay with respect to the first track containing Interval's claims for infringement of those two patents. *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 269 (W.D. Wash. June 25, 2012).[2]

The first track then proceeded to claim construction in the consolidated cases against Defendants–Appellees. On December 28, 2012, the district court issued the Claim Construction Order. *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 341 (W.D. Wash. Dec. 28, 2012). Because the cases at the district court at the time of the Claim Construction Order formally included both Interval's claims for infringement of the '652 and

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[2] Litigation on the other two patents—the '507 and '682 patents—remains stayed. The *ex parte* reexamination of the '507 has concluded, and the *inter partes* reexamination of the '682 patent is ongoing.

'314 patents as well as Interval's claims for infringement of the '507 and '682 patents (still stayed pending reexamination), the district court severed all of the claims and counterclaims relating to the '652 and '314 patents into four new cases: Nos. 2:13-cv-263 (AOL), 2:13-cv-264 (Apple), 2:13-cv-265 (Google), and 2:13-cv-266 (Yahoo!). *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 345 (W.D. Wash. Feb. 12, 2013). For each severed case, the district court issued a Final Judgment Order that: (1) granted final judgment of invalidity of certain claims of the '652 and '314 patents based on the Claim Construction Order; (2) granted final judgment of non-infringement for the remaining asserted claims of the '652 patent based on the Claim Construction Order and a stipulation among the parties; and (3) dismissed all counterclaims without prejudice. *See* Dkt. No. 7 in Case Nos. 2:13-cv-263, -264, -265, -266 (W.D. Wash. Feb. 28, 2013). These four Final Judgment Orders were the basis for the First Consolidated Appeal.

In the First Consolidated Appeal, this Court affirmed the invalidity ruling as to certain claims of the '652 and '314 patents, but reversed aspects of the district court's Claim Construction Order with respect to other '652 claims. After resolution of the First Consolidated Appeal, the sole remaining claims at issue in the track 1 cases were claims 15–18 of the '652 patent. On remand, the parties jointly proposed that the district

court first address Defendants' § 101 defense. Defendants filed a Motion for Judgment on the Pleadings of Invalidity Under 35 U.S.C. § 101 on December 16, 2015. Appx801-831 (motion). Interval filed its opposition on February 8, 2016, and Defendants filed their reply on March 3, 2016. Appx832-859 (response), Appx860-880 (reply).

On June 17, 2016, the district court ruled that claims 15, 16, 17, and 18 of the '652 patent were not patent-eligible under § 101. *See* Appx1-9. On July 22, 2016, for each severed case, the district court issued a Final Judgment Order that claims 15–18 of the '652 patent were invalid for lack of patentable subject matter and dismissed without prejudice all remaining counterclaims. *See* Appx10-12 (Case No. 2:13-cv-263), Appx13-15 (Case No. 2:13-cv-264), Appx16-18 (Case No. 2:13-cv-265), Appx19-21 (Case No. 2:13-cv-266). These four Final Judgment Orders are the basis of the present appeal. The district court judge who ruled on both claim construction and § 101 has now transferred the cases to another judge.

STATEMENT REGARDING ORAL ARGUMENT

Pursuant to Federal Rule of Appellate Procedure 34(a), Interval respectfully requests oral argument in this matter. Oral argument is appropriate because this matter meets the standards of Rules 34(a)(2) for oral argument, in that (a) this appeal is not frivolous; (b) the dispositive issues raised in this appeal have not been recently and authoritatively decided; and (c) in addition to the parties' respective briefs, the decisional process would be significantly aided by oral argument.

JURISDICTIONAL STATEMENT

This is an appeal from a final judgment of patent invalidity entered on July 22, 2016. Appx10-12 (263 case), Appx13-15 (264 case), Appx16-18 (265 case), Appx19-21 (266 case). The district court had jurisdiction under 28 U.S.C. §§ 1331 and 1338(a). Interval's notice of appeal was timely filed on August 16, 2016. *See* Appx125 (263 case), Appx137 (264 case), Appx146 (265 case), Appx155 (266 case). This Court has jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

STATEMENT OF THE ISSUES

Whether the district court erred in holding that claims 15-18 of the '652 patent are not patent-eligible under 35 U.S.C. § 101.

I. STATEMENT OF THE CASE

On August 27, 2010, Interval filed suit against Defendants alleging, in relevant part, infringement of the '652 patent. Specifically, Interval asserted that the notification features implemented in the Defendants' products infringed claims 15-18 of the '652 patent, by acquiring and displaying information of interest to a user in a noninvasive manner. For example, Google's Android operating system and Apple's iOS operating system display notifications on a user's cell phone or tablet when the user receives new information for which the user has previously requested notification updates. Likewise, AOL Instant Messenger and Yahoo! Messenger both display notifications when the user receives new email in their respective AOL or Yahoo! email accounts.

In early 2011, Google and Yahoo! filed a request for *ex parte* reexamination of the '652 patent at the PTO. After the PTO granted the reexamination request, the district court stayed the litigation. *See* Case No. 2:10-cv-1385-MJP, Dkt. No. 253 (W.D. Wash. June 16, 2011). On June 5, 2012, the examiner issued an *Ex Parte* Reexamination Certificate confirming the patentability of the asserted claims of the '652 patent, including claims 15-18. Subsequently, the district court lifted the stay, proceeded to claim construction, and issued a Claim Construction Order finding certain asserted claims invalid as indefinite. *See* Case No. 2:10-

cv-1385-MJP, Dkt. No. 269 (W.D. Wash. June 25, 2012) (lifting stay); *id.*, Dkt. No. 341 (W.D. Wash. Dec. 28, 2012) (claim construction order). Based on the claim construction order, the parties stipulated to noninfringement, and the district court entered Final Judgment for Defendants. Interval timely appealed, and the Federal Circuit vacated the judgment of noninfringement of claims 15-18 of the '652 patent based on a faulty construction of "attention manager." *Interval Licensing*, 766 F.3d at 1377-78.

On remand, Defendants raised for the first time a Motion for Judgment on the Pleadings regarding patentable subject matter under § 101. The district court granted Defendants' motion that claims 15-18 of the '652 patent were patent ineligible under § 101. Final Judgement was thereafter entered in each severed case, ruling that '652 patent claims 15-18 are invalid for lack of patentable subject matter under § 101. *See* Appx10-12 (AOL), Appx13-15 (Apple), Appx16-18 (Google), Appx19-21 (Yahoo!).

II. STATEMENT OF FACTS

A. Interval Research Corporation & Interval Licensing LLC

The patented technology at issue in this appeal was developed at Interval Research Corporation ("Interval Research"), a privately funded think tank founded in 1992 by Paul Allen and David Liddle to perform advanced research and development in the areas of information systems, communications, and computer science. Mr. Allen, who served as Interval Research's chairman, is the co-founder of Microsoft and one of the earliest pioneers of personal computer software. Mr. Liddle, who served as Interval Research's president and chief executive officer, led product development efforts at Xerox's renowned Palo Alto Research Center. Messrs. Allen and Liddle worked together to build Interval Research into a preeminent research and development company that employed over 110 of the world's leading scientists, physicists, and engineers.

Interval Research's primary focus was in designing innovative, next-generation computer technology. It was successful in this regard, pioneering a large number of groundbreaking technologies and earning approximately three hundred patents in less than a decade. *See* Appx161 (¶ 18). In addition to developing its own technologies, Interval Research also provided funding and technical assistance for other projects. As an example, Interval Research served as an outside collaborator and

provided funding for Sergey Brin and Lawrence Page's research that resulted in Google. *See* Appx161 (¶¶ 16-17). Despite its technological accomplishments, Interval Research never became profitable. In 2000, Interval Research laid off the bulk of its staff and, in 2004, it dissolved.

Interval Research transferred ownership of the '652 patent at issue in this appeal to Interval Licensing LLC, the Plaintiff-Appellant in this case. Interval Licensing is a sister company to Vulcan Inc., which is the corporation founded by Mr. Allen to manage his businesses and charitable endeavors. Vulcan Inc. and Interval Licensing have sought to protect, enforce, and monetize Interval Research's patent rights by selling, licensing, or litigating the patents in its portfolio.

B. The '652 Patent

The '652 invention is an attention manager that optimizes the use of a computer display screen to display information of interest to a user. The attention manager includes a user interface through which a user may request content data from a specific information source, thereby giving the user control over the content data that will be displayed by the attention manager. *See* Appx31-32 (2:26-28; 2:67-3:3; 4:34-37). The attention manager acquires the content data from the specified sources, generates images from the acquired content data, schedules the display of the images, and displays the images on a computer display screen. *See*

Appx31 (2:22-34). These images are displayed by the attention manager in conjunction with images from other computer applications, but in a manner that minimizes distraction from the other applications.

Specifically, the acquired images are displayed by the attention manager using "unused capacity" of the display screen. Appx31 (2:7-9). Thus, the attention manager acquires and displays information of interest to the user, but does so by only peripherally engaging the attention of the user, without disturbing the display of the computer application program with which the user is primarily interacting. Appx31 (2:3-19). The '652 patent describes at least two primary techniques for displaying the acquired content to the user using the "unused capacity" of the display device. Appx33 (6:45-51). The '652 patent sometimes refers to these two approaches, respectively, as the "screen saver embodiment" and the "wallpaper embodiment." *See* Appx32 (3:19-31).

In the screen saver embodiment, the attention manager displays information of interest to the user when the computer display screen is not actively being used by the user. Appx31 (2:9-12), Appx33 (6:34-38). The attention manager in this mode utilizes the temporal capacity of the display screen, which reflects idle periods during which the user is not interactively engaged with the computer. Appx33 (6:34-38; 6:45-51). During those periods of user inactivity, the attention manager displays

the information it has acquired from the specified content providers, according to various scheduling instructions. *See* Appx23 (Figure 1), Appx27-29 (Figures 5A-5C), Appx31 (2:28-34), Appx32 (4:47-55).

In the wallpaper embodiment, the attention manager displays images in areas of the display screen not currently used by the user's primary activity.[3] Appx31 (2:12-19), Appx33 (6:38-45). The unused capacity in this embodiment exists spatially in regions within the computer display, representing the portions of the screen that are not used by the computer application that is the user's primary focus. Appx32 (3:25-31), Appx33 (6:45-51). In this embodiment, the attention manager displays the information of interest in addition to, and simultaneously with, graphical images associated with the user's primary computer interaction. Appx32 (3:25-31).

1. The Architecture and Instructions

The claimed attention manager of the '652 patent retrieves content data from an external content-provider source, while maintaining

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[3] A "primary activity" constitutes "any operation of the computer that occurs to enable or support the performance of the function or functions that provide the basis for the user's use of the computer." *See* Appx783 (citing Appx34 (8:19-23)). The primary activity includes the application with which the user is primarily interacting, such as a word-processing program, a spreadsheet, or a computer game. Appx33 (6:23-32).

localized control over the particular content that will be displayed and the manner in which it will be displayed. *See* Appx33 (6:53-55), Appx34 (7:39-52). Figure 2 of the '652 patent illustrates a three-tiered network architecture of a system implementing the claimed attention manager:

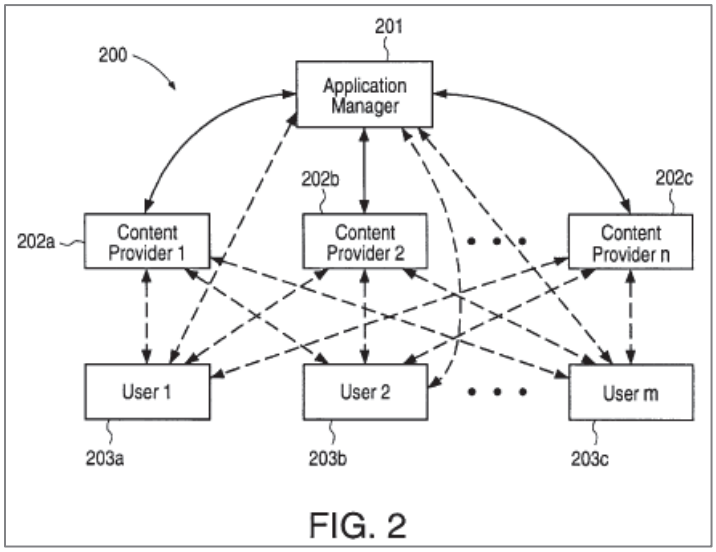


FIG. 2

Appx24 (Figure 2).

An application manager 201 forms the top tier of the architecture, while the middle tier includes one or more content providers 202a-c. *See* Appx37 (13:61-66). The bottom tier includes content display systems of the users 203a-c. *See* Appx37 (13:67-14:2). Each of these components includes instructions and/or data governing the operation of the attention manager system. *See* Appx25 (Figure 3A) (application manager instructions), Appx25 (Figure 3B) (content providing system instructions), Appx25 (Figure 3C) (content display system instructions), Appx37 (14:49-65).

The top tier of the system, the application manager, stores instructions that are disseminated to both the content providing systems and content display systems. *See* Appx37-38 (14:66-15:5). Among other things, these instructions are responsible for installing a user interface to determine which content data is of interest to the user (Appx38 (16:9-13)), acquiring that content data from the appropriate content providers (Appx38 (16:1-3)), scheduling the display of the images generated from the acquired content data (Appx38 (15:61-63)), and enabling the display of the images on each particular type of user display device (Appx38 (15:48-52)). The application manager provides some of these instructions—e.g., instructions relating to the acquisition, sequencing, and scheduling of content data—as templates for further customization by the content providers. *See, e.g.*, Appx38 (15:41-45) ("[D]isplay instructions 321 and content data scheduling instructions 322 . . . are typically enhanced by content providers in a particular manner that is appropriate for the content data that the content providers provide."). The application manager also provides some instructions directly to the content display systems, such as instructions for controlling the operation of specific types of content display systems. *See* Appx38 (15:8–30) (describing how plug-ins or helper applications can be distributed to control the operation of the content display device). Alternatively, some

of these instructions can be distributed by the content provider systems. *See* Appx38 (16:17-22).

Ultimately, these instructions are executed locally on the content display system to implement an attention manager that is specifically responsive to the user's display device environment. The different instructions used to implement the attention manager system are listed and briefly described below:

- installation instructions – install the attention manager for the particular hardware of a content display system, i.e., within the user's computer display environment. *See* Appx38 (15:15-19), Appx40 (19:16-21).
- operating instructions – begin, manage, and terminate the operation of the attention manager on a content display system. *See* Appx38 (15:9-12).
- user interface installation instructions – install a user interface that permits the user to request content data from a particular content provider. *See* Appx38 (16:9-13).
- acquisition instructions – acquire content data from sources specified by the user. *See* Appx38 (16:1-3), Appx39 (18:32-41), Appx40 (19:6-14), Appx26 (Figure 4).

- content data scheduling instructions – provide temporal constraints (e.g., duration, order, time, maximum views) on the display of content data. *See* Appx38-39 (15:61-63; 16:65-17:28).
- content display system scheduling instructions – determine which content data images to display and mediate conflicts between content data. *See* Appx35 (10:43-11:33).
- display instructions – display content of a particular type and/or display content for a particular type of display device. *See* Appx38 (15:48-52).
- content data update instructions – obtain updated content data from specific locations at specific times. *See* Appx39 (18:32-41), Appx42 (23:49-53), Appx26 (Figure 4).
- audit instructions – monitor the use and operation of the attention manager. *See* Appx38 (15:5-8), Appx44-45 (28:29-29:27).

The '652 patent describes how the attention manager instructions interact with these system components to display information of interest to a user without the user taking affirmative steps to retrieve that information. *See* Appx37-39 (14:49-18:31) (detailing the attention manager instructions).

2. Prosecution

During the prosecution of the '652 application, Interval submitted details regarding the specific software it had developed to implement the claimed invention to swear behind certain prior art. *See* Appx1410-1482. As part of that submission, inventor Philippe Piernot provided a declaration attaching source code for three implementations of an attention manager along with an exemplary user interface for controlling the operation of the attention manager from a user's computer. *See* Appx1448-1482.

Exhibit 1 to the Piernot declaration included source code instructions showing the implementation of a wallpaper embodiment. *See* Appx1458-1461. This implementation "allowed a user to select an image displayed at a Web site" as content data of interest to the user. Appx1448. The content data is "retrieved by the content display computer from an appropriate World Wide Web site" using a subroutine called "fetchAllPicturesIn" at lines 35 through 62 of Exhibit 1. *See* Appx1449 (describing operation of source code lines 35-62). This implementation supported two types of content data: JPEG and GIF format images. *See* Appx1449. Once the images were ready for display, the images were displayed as background wallpaper on the computer display. *See* Appx1449-1450. In addition, the attached source code would "periodically

retrieve . . . and display an updated set of content data corresponding to a set of content data previously retrieved from a Web site." Appx1450 (describing operation of source code lines 10-22). *See also* Appx1436-1438 (detailing how then claim 49 (now claim 15) maps to Exhibit 1).

Exhibit 4 to the Piernot declaration included source code instructions implementing another wallpaper embodiment. *See* Appx1478-1482. This implementation supported the display of images as background wallpaper on the computer display or, alternatively, within a pre-designated area of the computer display. *See* Appx1456 ("Depending on the type of content data acquired, the image was displayed as 'wallpaper' (see line 25 and lines 29-49) or in a display area dedicated to the browser software (see line 26, and lines 50-64)."). Thus, the acquired content data was displayed either as a background in the computer display, or within a dedicated region of the computer display screen that was reserved for displaying acquired images of interest to the user.

Exhibit 2 to the Piernot declaration included source code instructions implementing a "screen saver" embodiment of the attention manager. *See* Appx1462-1476. Just as in the earlier-described implementations, the user selected images of interest on the Web and these were stored locally on the computer display device for subsequent

display. *See* Appx1452-1453. On detection of an idle period, the source code began displaying the content data of interest to the user. *See* Appx1453 (describing how source code lines 33-49 on page 6 of Exhibit 2 detect an idle period), Appx1453 (describing how source code lines 5-32 on page 2 of Exhibit 2 caused the display of one or more images). *See also* Appx1435-1436 (detailing how then claim 49 (now claim 15) maps to Exhibit 2).

Piernot explained that each of these example programs implemented the distributed architecture described in the specification whereby the user's computer fetched content data from networked content provider systems. *See, e.g.*, Appx1449 (Exhibit 1 implementation "caused content data to be retrieved by the content display computer from an appropriate World Wide Web site"), Appx1452 (Exhibit 2 implementation "acquired content data from a World Wide Web site"), Appx1456 (Exhibit 4 implementation "acquired content data from a World Wide Web site"). For the implementations detailed in Exhibits 1 and 4, fetching content data was performed by the "fetchAllPicturesIn" subroutine. *See* Appx1449 (regarding Exhibit 1 source code lines 35-62), Appx1456 (regarding Exhibit 4 source code lines 67-89). For the Exhibit 2 implementation, a "fetchImages" function implementing code shown in Exhibit 1 was used to "transfer set(s) of content data from Web site(s) to

the content display computer." Appx1454. Additionally, Piernot described how a separate application manager computer was configured for distributing the source code instructions to users' desktop computers for operation. *See* Appx1450-1451 (describing the transfer of instructions from an "application management computer" to a "content display computer"). Thus, Piernot's disclosed computer programs and accompanying declaration further illustrate the multi-tiered, networked architecture for the '652 patent's attention manager.

The '652 patent's attention manager architecture is effective for distributing information of interest to a user which has been customized for that particular user's environment. *See* Appx22 (Abstract). The attention manager provides the user with access to content of interest without being required to explicitly retrieve it or explicitly initiate its presentation. *See* Appx31 (2:38-42). Once acquired, the content is presented in a manner that does not detract the user from her primary activity. *See* Appx31 (2:3-5).

C. The Claim Language

Claim 18 is representative of the asserted claims of the '652 patent:

> 18. A computer readable medium, for use by a content display system, encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a

display device during operation of an attention manager, comprising:

acquisition instructions for enabling acquisition of a set of content data from a specified information source;

user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source;

content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data;

display instructions for enabling display of the image or images generated from the set of content data;

content data update instructions for enabling acquisition of an updated set of content data from an information source that corresponds to a previously acquired set of content data;

operating instructions for beginning, managing and terminating the display on the display device of an image generated from a set of content data;

content display system scheduling instructions for scheduling the display of the image or images on the display device;

installation instructions for installing the operating instructions and content display system scheduling instructions on the content display system; and

audit instructions for monitoring usage of the content display system to selectively display an image or images generated from a set of content data.

Appx47 (33:15-34:24). This Court has previously construed "attention manager" and "instructions," while the district court construed several other terms in the asserted claims. These constructions are provided in the following table.

Term	Construction
attention manager	a system that displays images to a user either when the user is not engaged in a primary interaction or in an area of the display screen that is not used by the user's primary activity[4]
content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data	instructions that affect the duration, order, timing, and/or frequency of the display of the image or images generated from the set of content data[5]
content data update instructions for enabling acquisition of an updated set of content data from an information source that corresponds to a previously acquired set of content data	instructions that specify when to obtain an updated version of a set of content data and the location from which to obtain such an updated version[6]
content display system scheduling instructions for scheduling the display of the image or images on the display device	instructions that implement a display schedule by determining which image or images generated from the sets of content data will be displayed and mediating conflicts between the display requirements of multiple sets of content data[7]
images generated from the set of content data	audio and/or visual output that is generated from data within a set of content data[8]
instructions	a statement that specifies a function to be performed by a system[9]
primary interaction	any operation of the computer that occurs to enable or to support the performance of the function or functions that provide the basis for the user's use of the computer[10]
user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source	installation instructions for enabling provision of an interface that enables a person to request the set of content data from a specified source of information[11]

D. Summary of the District Court's Opinion

On June 17, 2016, the district court issued an order granting Defendants' motion and holding that the asserted claims of the '652 patent represent unpatentable subject matter under 35 U.S.C. § 101.

At the outset, the district court noted that the parties agree the claims are directed to the operation of an "attention manager," which was construed by this Court as "a system that displays images to a user either when the user is not engaged in a primary interaction or in an area of the display screen that is not used by the user's primary activity." Appx3. *See Interval Licensing*, 766 F.3d at 1376 (construing "attention manager"). After summarizing the parties' positions, the district court held that the claims are "directed to the abstract idea of providing information to a person without interfering with the person's primary activity." Appx4. The court then provided two examples of the stated abstract idea in

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[4] *See Interval Licensing*, 766 F.3d at 1376.

[5] *See* Appx792-793.

[6] *See* Appx793-794.

[7] *See* Appx794-795.

[8] *See* Appx779-780.

[9] *See Interval Licensing*, 766 F.3d at 1377.

[10] *See* Appx783.

[11] *See* Appx786-787.

practice: (1) a breaking news ticker during a news television program; and (2) a legal assistant providing notes to an attorney participating in a conference call. *See* Appx4.

At step two, the court provided a summary of *Alice* as it relates to the intersection of claim elements and computer components, see Appx6-7, followed by a summary of *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014), see Appx7. The district court concluded its case law summary by holding that the elements of the asserted claims are purely conventional:

> The Court finds that the elements of the asserted claims are purely conventional and do no more than apply the abstract idea of providing information to a person without interfering with the person's primary activity in the particular technological environment of networked computers. The claims are implemented using only well-known, pre-existing and conventional computer equipment.

Appx7-8.

The district court then stated that the claims "are not limited to using unused space on a screen with windows because the screen saver embodiment is not related to unused spatial capacity." Appx8. Further, the district court stated that the claims "do not recite how the attention manager performs the function of determining where to display images in the 'windowed' environment so that they do not interfere with a user's

primary activity." Appx8 (citing *Internet Patents Corp. v. Active Networks, Inc.*, 790 F.3d 1343, 1348 (Fed. Cir. 2015)). According to the court, "[d]etails from the specification that are not found in the claims cannot provide a missing inventive concept." Appx8 (citing *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1334 (Fed. Cir. 2012)).

The district court then concluded its step two analysis:

> Analyzing the claim elements here individually or as an ordered combination yields the same result: the patents do not contain an inventive concept sufficient to transform the abstract idea into a patent-eligible application. Instead, the claims offer nothing more than a generic, high-level description of an abstract idea that can be implemented with nothing more than generic, pre-existing computer functionality.

Appx8-9. The district court did not address any specific claim limitations in its step two analysis.

III. SUMMARY OF ARGUMENT

The district court erred by holding that claims 15-18 of the '652 patent are not patent-eligible under 35 U.S.C. § 101. First, counter to this Court's precedent, the district court ignored the limitations of the claims when conducting its § 101 analysis, resulting in an oversimplification of the claimed subject matter.

The claims, when considered in their entirety, are not directed to an abstract idea. They include many limitations detailing specific program instructions that govern and restrict the operation of the claimed attention manager. Additionally, the claims—when properly viewed as a whole—are directed to a technological improvement to existing techniques for disseminating content data to interested users. Specifically, the attention manager creates a composite display that combines the user's primary interaction images with content data of interest to the user within the remaining unused display capacity. Thus, the attention manager improves the operation of computer display devices, while simultaneously improving the user's experience by automatically providing information of interest to the user.

Even assuming that the claims are directed to an abstract idea, they are patent-eligible because they contain inventive concepts. First, the claims provide a technological improvement that is rooted in computer

display technology. Per this Court's construction of "attention manager," the claimed invention is inextricably tied to a computer display device. The attention manager improves the operation of computer display devices by targeting the previously unused display capacity of the display device to provide information from specific sources selected by the user. Second, the PTO recognized during prosecution and reexamination that the claims provide significant improvements over the prior art by including a capability to locally control the content that the attention manager acquires from external sources and the display of that content. Third, the attention manager is implemented within a distributed architecture that improves on the prior art solutions, which were relatively simple, self-contained programs. The distributed architecture of the '652 patent allows the attention manager to provide the user with a wide variety of content options from various external sources, while still maintaining localized control over the particular images that will be acquired and displayed for each user.

IV. ARGUMENT

A. Standard of Review

The Court reviews procedural aspects of the grant of judgment on the pleadings under the regional circuit's law. The Ninth Circuit exercises plenary review of Rule 12(c) motions. *Kotrous v. Goss-Jewett Co. of N. Cal.*, 523 F.3d 924, 929 (9th Cir. 2008). In a § 12(c) motion, "the appellate court must accept all material allegations in the complaint as true and construe them in the light most favorable to the non-moving party." *Id.* (internal quotations omitted).

Patent eligibility under § 101 is a question of law, which is reviewed *de novo*. *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1311 (Fed. Cir. 2016). Contesting § 101 eligibility is an invalidity challenge. *Versata Dev. Group, Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1330 (Fed. Cir. 2015). "[Section] 282 provides that '[a] patent shall be presumed valid' and '[t]he burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.'" *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 100 (2011). The defendant bears "a heavy burden of persuasion," which must be met by "clear and convincing evidence." *Id.* at 101-03; *see also CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1304-05 (Fed. Cir. 2013) (Rader, J., Linn, J., Moore, J., and O'Malley, J., concurring-in-part and dissenting-in-part)

(explaining that challenges to eligibility must be proven by clear and convincing evidence).

B. Legal Framework of Patent Eligibility

Patentable subject matter under § 101 broadly encompasses processes, machines, manufactures, and compositions of matter but is subject to exceptions for "laws of nature, physical phenomena, and abstract ideas." *Bilski v. Kappos*, 561 U.S. 593, 601 (2010). These exceptions are applied narrowly because "too broad an interpretation of this exclusionary principle could eviscerate patent law." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012).

1. Application of the *Alice*/*Mayo* Framework

In step one of the *Alice*/*Mayo* analysis, the court determines "whether the claims at issue are directed to one of th[e] patent-ineligible concepts." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). The claim must be viewed as a whole, and all claim limitations (and pertinent claim constructions) must be considered. *See Diamond v. Diehr*, 450 U.S. 175, 188 (1981). The Supreme Court has not identified the precise boundaries of the "abstract idea" exception, but its precedent speaks of mathematical equations, "fundamental economic practice[s],"

"scientific truth[s]," and "longstanding commercial practice[s]." *See Alice*, 134 S. Ct. at 2356; *Mayo*, 132 S. Ct. at 1294.

Before expanding the scope of judicially recognized abstract ideas, a court should consider how factors found pertinent in prior cases apply to the newly alleged abstract idea. For a claimed machine to weigh in favor of eligibility, the claims must amount to more than just an instruction to "apply [the abstract idea] with a computer." *Alice*, 134 S. Ct. at 2358. The court should also consider whether the claims are drawn to activity that could be performed by the human mind alone or on pen and paper without a computer. *See Gottschalk v. Benson*, 409 U.S. 63, 67 (1972). Conversely, technological solutions to problems arising in the realm of computers are not abstract. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014). Because the policy underlying the judicially created exceptions to § 101 are driven by preemption concerns, a court should further consider whether the claims when considered as a whole threaten to "'wholly pre-empt' the public's access to the 'basic tools of scientific and technological work'" (even if this preemption would occur only in particular fields). *Bilski*, 561 U.S. at 658 (Breyer, J., concurring) (quoting *Gottschalk*, 409 U.S. at 67).

If the court finds an abstract idea at step one, it proceeds to step two, where it examines whether the claim contains an "inventive concept

sufficient to transform the claimed abstract idea into a patent-eligible application." *Alice*, 134 S. Ct. at 2357 (quotation marks omitted). This inquiry differs from novelty and non-obviousness in that it focuses on whether the claims "purport" to set forth a technological solution/improvement. *Id.* at 2359. The claim limitations must be considered both individually and "as an ordered combination." *Id.*

If the claims "purport to improve the functioning of the computer itself" or "effect an improvement in any other technology or technical field" using non-conventional elements or a non-conventional arrangement of conventional elements, the claim passes step two and is patent-eligible. *Id.*; *see also BASCOM Global Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349-50 (Fed. Cir. 2016).

2. Federal Circuit Precedent Applying *Alice* in Computer-Related Inventions

Most of this Court's cases holding claims ineligible apply the *Alice* prohibition against claims that recite no more than basic steps necessary to perform an abstract idea on a generic computer. *See, e.g.*, *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016) (receiving, analyzing, and displaying energy grid information on a generic computer); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363 (Fed. Cir. 2015) (tracking financial transactions against a

budget and displaying customized content based on user characteristics and time of day implemented on a generic computer); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014) (creating a transaction performance guaranty using networked computers).

The claims in those cases did not purport to use the recited computers to solve any technological problems. *See, e.g.*, *Elec. Power Group*, 830 F.3d at 1354 ("The advance [the claims] purport to make is a process of gathering and analyzing information of a specified content, then displaying the results, and not any particular assertedly inventive technology for performing those functions."); *buySAFE Inc.*, 765 F.3d at 1355 ("The computer functionality is generic—indeed, quite limited: a computer receives a request for a guarantee and transmits an offer of guarantee in return."). Instead, the claims in these cases simply "spell[ed] out what it means to 'apply [the abstract idea] on a computer,'" which "cannot confer patent-eligibility." *Intellectual Ventures I*, 792 F.3d at 1370 (quoting *Alice*, 134 S. Ct. at 2359).

In contrast, computer-implemented claims that "purport to improve the functioning of the computer itself" or "effect an improvement in any other technology or technical field" remain patent-eligible. *Alice*, 134 S. Ct. at 2359. This is true even when the claims make use of generic or conventional computer components. *See BASCOM*, 827 F.3d at 1349-50

(holding patent-eligible claims consisting entirely of limitations that "taken individually, recite generic computer, network and Internet components, none of which is inventive by itself").

3. Cases Finding Claims Ineligible Due to Result-Oriented or "Functional" Claiming

In addition to the cases discussed above drawing a line between abstract ideas applied to a generic computer versus technical enhancements to computer-related systems, some Federal Circuit decisions addressing § 101 have suggested that claims broadly covering a result or an effect constitute an abstract idea, unless the patent provides the mechanism or process by which the result or effect is achieved. *See, e.g.*, *Internet Patents Corp. v. Active Networks, Inc.*, 790 F.3d 1343, 1344-45 (Fed. Cir. 2015). *But see Amdocs (Isr.) Ltd. v. Openet Telecom, Inc.*, No. 2015-1180, 2016 U.S. App. LEXIS 19593, at *13-14 (Fed. Cir. Nov. 1, 2016) ("The dissent offers a different paradigm for identifying an abstract idea: 'it is apparent that a desired goal (i.e., a "result or effect"), absent structural or procedural means for achieving that goal, is an abstract idea.' . . . [T]hat is not now the law, either in statute or in court decision.").

C. The '652 Patent Claims Are Not Directed to an Abstract Idea

The district court's analysis oversimplified the claims, leading it to incorrectly conclude that the claims are directed to an abstract idea. As detailed below, the claims recite specific instructions governing the operation of the attention manager, including, for example, user interface instructions permitting the user to designate content data of interest, acquisition instructions that retrieve the content data of interest from a content provider, and scheduling instructions providing temporal constraints on the display of the acquired content data. Contrary to the district court's conclusion, the '652 claims recite specific instructions governing the attention manager's operation that provide a technological improvement to the art.

The content data is displayed either in areas of the display not used by the primary application running on the computer, or during periods of inactivity. Example implementations for these embodiments are provided in the intrinsic record, which contains three computer programs detailing how the inventors elected to display the information of interest to take advantage of unused capacity of the display screen. *See* Appx1448-1482 (Piernot Declaration).

The '652 claims thus are directed to a technological improvement in the form of an attention manager that acquires content based on the

particular interests of each user and displays that content within the unused capacity of a computer display device associated with that user. When viewed in combination, claims 15-18 of the '652 patent recite a specific technological approach to the acquisition, scheduling, and display of content data to an interested user. The solution relieves the user from performing those tasks and does not divert the user from his/her primary interaction with the special purpose computer system. Under step one of the *Mayo*/*Alice* framework, the '652 claims are not abstract.

1. The District Court Oversimplified the Claims

The district court erred by overgeneralizing the '652 claimed subject matter. In doing so, it violated this Court's admonishments that describing claims at an excessively high level of abstraction, untethered from the claim language, all but ensures that the exceptions to § 101 will swallow the rule. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016); *McRO*, 837 F.3d at 1313. In its opinion, the district court held "that the asserted claims are directed to the abstract idea of providing information to a person without interfering with the person's primary activity." Appx4.

In arriving at this conclusion, the district court failed to analyze any of the limitations in the body of the asserted claims, focusing exclusively on the "attention manager" preamble language and this Court's

interpretation of that language. The district court rejected Interval's arguments that the claims are not directed to an abstract idea because the claims include non-abstract elements, see Appx4, and then it summarily held that, whether considered individually or as an ordered combination, "elements of all of the claims at issue (claims 15-18 of the '652 patent) are directed towards the same abstract idea—providing information to a person without interfering with the person's primary activity." Appx5.

Contrary to the district court's analysis and conclusion, this Court has made it clear that the specific requirements of the claims must be considered when determining the focus of the claims:

> We have previously cautioned that courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and ***failing to account for the specific requirements of the claims***. . . . Whether at step one or step two of the *Alice* test, in determining the patentability of a method, ***a court must look to the claims as an ordered combination, without ignoring the requirements of the individual steps***.

McRO, 837 F.3d at 1313 (citing *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016)) (emphases added). Here, the district court failed to account for any of the specific requirements of the claims other than "attention manager" in making its step one determination. When viewed as a whole, the claims recite a set of detailed computer

program instructions that specify the operation of the attention manager and the specific instructions used to select, acquire, and schedule the display of content data to a user in a non-invasive manner.[12] The district court's failure to address any of the claim limitations or their impact on the entirety of the claimed invention at step one is error that resulted in an incorrect and harmful result.

2. The Claims Recite Specific Instructions Dictating the Operation of the Attention Manager

Claim 18, which the district court agreed was a representative claim, see Appx5, includes multiple limitations detailing specific instructions that restrict the operation of the attention manager. Each of the claimed instructions requires the attention manager to have the specified capability, further narrowing the scope of the '652 claims and precluding it from preempting the field of providing information to a person. Several of these limitations have been construed by this Court and the district court, and such constructions are relevant to the § 101 inquiry. *See Enfish*, 822 F.3d at 1337 (relying on construed terms to

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[12] Such instructions constitute the structure of the claimed computer software. *See Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) ("[T]o one of skill in the art, the 'structure' of computer software is understood through, for example, an outline of an algorithm, a flowchart, or a specific set of instructions or rules.").

determine what the claims are directed to for *Alice* step one); *McRO*, 837 F.3d at 1313 (same); *see also Amdocs*, No. 2015-1180, 2016 U.S. App. LEXIS 19593, at *24 ("In addition to taking into consideration the approved claim constructions, we examine the claims in light of the written description.").

The following subsections discuss five pertinent limitations of the asserted claims that are important to fully appreciate the scope and operation of the claimed attention manager. The first three limitations detailed below are present in every asserted claim, while the final two limitations are only present in claim 18. That the district court failed to address any of these limitations in its step one analysis is error.

a. user interface installation instructions

The "user interface installation instructions" limitation requires that the attention manager retrieves content data about which the user has expressed an interest. The district court construed this limitation as "installation instructions for enabling provision of an interface that enables a person to request the set of content data from a specific source of information." Appx786. Thus, the user indicates the content data that he or she is interested in having the attention manager acquire. *See* Appx33 (6:64-67) ("The content providing systems can also provide user interface tools that allow a user of the attention manager to specify that

they want to obtain a particular set of content data."), Appx39 (18:60-62) ("Any appropriate user interface can be used for enabling a ***user to directly request*** a particular set of content data." (emphasis added)). This limitation requires that the user exercise some degree of control regarding the information that will be acquired and displayed, rather than subjecting the user to any and all content and advertisements that an external provider may wish to deliver.

During prosecution, Interval relied on this limitation to distinguish prior art before the PTO. *See* Appx1306 (stating that Judson fails to teach or suggest the "user interface installation instructions" limitation). Similarly, during reexamination proceedings, Interval again relied on this limitation to distinguish the cited Kjorsvik patent. Specifically, Interval argued that "the user interface enables the user to choose specific information of interest to her . . . ." Appx2983. Interval explained that "the user interface installation instructions enable ***the user to control her personal user experience*** by using the user interface to indicate interest in particular information from a specific source." Appx2984. The examiner's reasons for confirming the claims as patentable relied on the "user interface installation instructions" limitation. *See* Appx1610 ("The rejections of claims 15-18 over Kjorsvik, alone or in combination with another reference, are withdrawn because

Kjorsvik does not disclose the claimed 'user interface' because Kjorsvik's messenger module does not allow a person to request the set of content data from the specified information source as required by the claims."). Accordingly, the "user interface installation instructions" limitation constrains the source of the content data acquired by the attention manager system in a manner that differed from prior art approaches.

b. acquisition instructions

The "acquisition instructions" limitation also overcomes certain deficiencies that existed in conventional screen saver and desktop wallpaper applications, including the fact that "screen saver and wallpaper application programs ***have not been constructed to enable retrieval of display content from a remote location*** via a computer network." Appx31 (1:64-67) (emphasis added). The claimed attention manager acquires information from an information source specified by the user that is separate from the attention manager. *See, e.g.*, Appx33 (5:26-29) ("[W]hen the attention manager is implemented using a network . . . , the user can acquire information from a wide variety of information sources."), Appx42 (24:21-35) (describing the use of network sockets to obtain content data updates), Appx41 (22:24-51) (illustrating a sample content data package file providing web addresses for content data locations).

During prosecution, Interval provided three attention manager implementations that each obtained content data from World Wide Web sites—i.e., from locations external to the attention manager. *See supra* II.B.2 (describing the operation of the three Piernot implementations). Additionally, Interval distinguished similar claims from the prior art based on the ability to obtain content data from a source that is separate from the attention manager program. *See* Appx1298 ("The computer program(s) stored on the computer readable medium of Claim 66 are not integrated with the set of content data."), Appx1299 (noting that the Pirani reference does not permit content data to "be obtained from other devices via a computer network").[13] Thus, the claimed "acquisition instructions" require acquiring content data from an information source distinct from the attention manager.

c. content data scheduling instructions

The district court construed the "content data scheduling instructions" limitation as "instructions that affect the duration, order,

[13] Defendants have argued that Interval disclaimed acquiring content data from local, non-networked sources based on this prosecution history exchange. *See* Appx462-463 (addressing "means for acquiring a set of content data from a content provider system" in '652 claim 4).

timing, and/or frequency of the display of the image or images generated from the set of content data." Appx792-793. The "content data scheduling instructions" control the presentation of images to the user, including the duration, order, timing, and frequency. The specification describes these instructions:

> The content data scheduling instructions can specify, for example, the duration of time that the image or images generated from a set of content data can be displayed, an order in which the images generated from a plurality of sets of content data are displayed, a time or times at which the image or images generated from a set of content data can or cannot be displayed, and/or constraint on the number of times that the image or images generated from a set of content data can be displayed.

Appx32 (4:47-55). The schedule can be tailored to cater to the user's characteristics or based on the type of content data being presented, thereby providing a schedule that is customized for the user and the user's display device environment. *See* Appx36 (11:17-33). Additionally, the content data scheduling instructions can preclude displaying images from "stale" content data (i.e., content data acquired before a given time). *See* Appx36 (11:13-17). When a new set of content data is received by the attention manager, the schedule may be revised to include the new content data. Appx35 (10:10-13). Thus, the "content data scheduling instructions" limitation requires scheduling the acquired content data for

presentation to a particular user within the user's particular display device environment.

d. content display system scheduling instructions

The district court construed "content display system scheduling instructions" as "instructions that implement a display schedule by determining which image or images generated from sets of content data will be displayed and mediating conflicts between the display requirements of multiple sets of content data." Appx794-795. The "content display system scheduling instructions" determine which image will be displayed and address conflicts that may arise between different sets of content data. The determination regarding which image to display can be made by a probability function that accounts for characteristics such as "the amount of time that has passed since a particular set of content data has been updated" or based on whether the user has expressed a like or dislike for the set of content data. *See* Appx43-44 (26:52-27:15) (describing the use of a probability function for determining whether an image is displayed). Similarly, the process of mediating scheduling conflicts involves applying rules that effectively order or prioritize the conflicting sets of content data. *See* Appx35-36 (10:43-11:10) (describing different rules for mediating conflicts). Thus, the "content display system scheduling instructions" limitation requires that

the attention manager select and prioritize images for display among the available content data.

e. content data update instructions

The district court construed "content data update instructions" as "instructions that specify when to obtain an updated version of a set of content data and the location from which to obtain such updated version." Appx793-794. This limitation places further requirements on the operation of the attention manager—namely, constraints on when content data updates are acquired and from where such updates are acquired. Such granular controls improve the operation of the attention manager by permitting updates to be performed at optimal times, such as during periods of lighter network activity. *See, e.g.*, Appx42 (24:6-9) ("[T]he update schedule could be established so that updates are obtained during the middle of the night, when charges for communication with content providing systems 202 are cheaper."). Additionally, the frequency of updating content can be determined, in part, by the type of content. *See* Appx39 (18:16-20) ("[T]he particular update schedule used will depend upon the character of the content data with which the update schedule is associated, e.g., content data representing stock prices would probably be updated more frequently than content data representing an

advertisement."). Thus, the "content data update instructions" provide further limitations on the operation of the attention manager.

3. The District Court Ignored These Claimed Instructions

The district court's analysis and characterization of what the asserted claims are "directed to" failed to consider any of these limitations. The impropriety of this omission is demonstrated by the district court's recitation of "longstanding practices" that implement the purported abstract idea. The first practice involves "a television station's use of a breaking news ticker across the bottom of the screen." Appx4. In this scenario, however, the user does not have the ability to specify the content data that is displayed in the ticker, as required by the claimed user interface installation instructions. Rather, the user is forced to consume whatever content the television station chooses to provide in the ticker. Stated differently, the user's choice of a primary activity (e.g., watching a television channel) completely controls what, if any, information content may be displayed alongside that primary activity (e.g., news ticker).

Further, the claimed attention manager is part of the content display system and thus runs on the user's device, not at a centralized location like a TV network. The attention manager must acquire the content data, schedule the display of that data, resolve conflicts among

different sets of content data, and update the set of content data. In the example of the news ticker, the information gathered and displayed is under the control of mechanisms that operate centrally at the TV network. The claimed invention effectively moves the gathering and display instructions to the user's display device, allowing the information that is displayed to be customized for the user and his or her display device environment. The news ticker example, therefore, only serves to highlight the uniqueness of the '652 claimed inventions.

The practice of a legal assistant passing notes to an attorney during a conference call also fails to adequately capture the subject matter of the '652 claims. *See* Appx4. There is no display device at all in this scenario. Nor is there a "primary activity," which was construed to mean "***any operation of the computer*** that occurs to enable or to support the performance of the function or functions that provide the basis for the ***user's use of the computer***." Appx783 (emphases added). Ignoring the claim limitations yielded an abstract idea and corresponding analogies that are completely divorced from the invention and claims as a whole.

To summarize, the limitations—as construed and described in the intrinsic record—recite specific instructions that govern and restrict the operation of the claimed attention manager, while allowing a high level of customization at the user's device. As such, the claimed attention

manager transforms a generic computer display device into a specialized machine—providing an important clue as to the patentability of the asserted claims. The district court ignored all of these limitations, which is improper, even at step one. *See McRO*, 837 F.3d at 1313 ("We have previously cautioned that courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and ***failing to account for the specific requirements of the claims***." (citing *In re TLI Commc'ns*, 823 F.3d at 611) (emphasis added)); *see also Amdocs*, 2016 U.S. App. LEXIS 19593, at *55-56 (Reyna, J., dissenting) ("[W]here the claim recites specific structure or function for accomplishing the desired goal in a particular way, the claim is more likely directed to a means than to the underlying abstract goal.").

4. The Attention Manager Provides a Technological Improvement to Existing Techniques for Disseminating Information Through Computers

A hallmark of patent-eligible claims is that they provide a technological solution or improvement. *See Alice*, 134 S. Ct. at 2359 (explaining that the claims at issue do not "effect an improvement in any other technology or technical field"); *Enfish*, 822 F.3d at 1337 ("[O]ur conclusion that the claims are directed to an improvement of an existing technology is bolstered by the specification's teachings that the claimed

invention achieves other benefits . . . ."); *McRO*, 837 F.3d at 1316 ("When looked at as a whole, claim 1 is directed to a patentable, technological improvement over the existing manual 3-D animation techniques."). Here, the specification and prosecution history confirm that the claims are not abstract because they provide a technological improvement to the operation of computers. *See DDR*, 773 F.3d at 1257.

The specification discusses at least two types of prior computer programs that present images in the unused capacity of a display device: screen savers and desktop wallpaper. *See* Appx31 (1:39-67). However, the specification explains that these solutions suffered from two general drawbacks: (1) they were "relatively simple, self-contained computer application programs that . . . [did not] . . . enable retrieval of display content from a remote location via a computer network," Appx31 (1:61-67); and (2) they typically presented images for "aesthetic or entertainment value," Appx31 (1:47-55). The claimed attention manager addresses these shortcomings and converts what was largely unused display capacity into a conduit through which a user can obtain desired content.

The attention manager is not a conventional "self-contained" program; rather, it is able to acquire and display content data from external sources. This is a technological improvement over the prior

systems that integrated content directly into the underlying program itself. *See* Appx31 (1:60-64) (describing how screen savers and wallpaper programs were "implemented as relatively simple, ***self-contained computer application programs***" (emphasis added)). During prosecution of the '652 patent involving related claims, Interval stressed that this capability provided "important advantages" because it "allows a much larger variety and number of images to be displayed." Appx1296. *See also* Appx1294 (distinguishing related claims over Pirani, which could only display images that have been incorporated directly into the software system itself).

Second, the attention manager improves on prior solutions because it presents *customized* information from user-specified content providers rather than just images generated for aesthetic or entertainment value. *See* Appx31 (1:57-59) ("[S]creen savers and wallpaper have not heretofore been used as a means to convey ***information from information providers*** to computer users." (emphasis added)). The claimed attention manager effectively matches interested users with content providers, benefiting both the content providers and the users. *See* Appx33 (5:35-37) ("The attention manager affords an opportunity to content providers to disseminate their information to users that are interested in receiving such information . . . ."), Appx34 (7:39-65) (describing how the

capabilities of the attention manager are advantageous to both users and to information providers).

Not only do users receive customized information of interest automatically, but also that information is displayed to the user more efficiently, while minimizing the distraction to the user. *See* Appx31 (1:8-9) ("This invention relates to the engagement of the peripheral attention of a person in the vicinity of a display device . . . ."), Appx22 (Abstract) ("The attention manager ***makes use of the 'unused capacity' of the display device and the person's attention***, providing information to the person that the person might not otherwise expend adequate energy to obtain." (emphasis added)). The attention manager enhances the functionality of a user's computer by displaying the acquired content data together with the user's primary interaction, either in regions of the display screen not displaying images from the user's primary interaction, or else during periods when the user is not actively engaged with another application. The ability to combine the information of interest with the user's primary computer interaction constitutes a technological improvement to the computer system itself and to the manner in which such information is presented to a user.

Accordingly, the asserted claims are not directed to performing an abstract idea on a computer; rather, they are directed to a specific

technological improvement over prior solutions for making use of unused capacity on a computer display to present customized information to a user. *See Alice*, 134 S. Ct. at 2358 ("[T]he claims in *Diehr* were patent eligible because they improved an existing technological process, not because they were implemented on a computer."). Because the claimed attention manager improves the functionality of a computer system, the claims are directed to patent eligible subject matter. *See Enfish*, 822 F.3d at 1339 (holding claims that improve the functionality of a computer to be patent eligible at step one).

5. The Outcome Here Is Dictated by *McRO*

In *McRO*, the Federal Circuit determined that claims relating to an automated, rules-based method for performing 3D animation were patent eligible. *See McRO*, 837 F.3d at 1316. Its determination was made, in large part, because "[h]ere the claims are limited to rules with specific characteristics." *Id.* at 1313. The *McRO* defendants alleged that the claims were directed to *any* rules-based system for performing 3D animation, yet this Court disagreed. *See id.* at 1302-03, 1310. Similarly, Defendants here allege that the claimed instructions for implementing the attention manager are "generic" and not limited in any meaningful way. *See* Appx806. However, just as in *McRO*, the instructions required for the claimed attention manager are specialized instructions with

meaningful limits that are associated with the user's display device. *See supra* IV.C.2.

As detailed earlier, the user interface installation instructions provide limits on how information sources for content data can be determined. Similarly, the acquisition instructions provide limits on where content data can be acquired from—as admitted by Defendants during Claim Construction. *See* Appx463. Likewise, the content data scheduling instructions and content display scheduling instructions impose limitations on the presentation of images generated from the acquired content data. Finally, the content data update instructions provide specific limits on when updates to content data are acquired and from where such updates are acquired. Just as in *McRO*, where the "rules [were] limiting," here, the instructions are limiting. In addition, each of these instructions is associated with the content display system, and all of these computer instructions run on the user's local device, rather than at some central location. This allows the content to be customized for each and every user, and to be displayed to that user based on the specific activities of that user (e.g., which computer application relates to their primary interaction and what capacity of the display device is it occupying).

The *McRO* Court explained "[i]t is the incorporation of the claimed rules, not the use of the computer, that improved the existing technological process by allowing the automation of further tasks." *McRO*, 837 F.3d at 1314 (quotation marks omitted). Here, it is the specific instructions recited by the asserted claims that improve on prior solutions, such as screen savers and desktop wallpapers. *See supra* IV.C.4. Just as the invention in *McRO* used specific rules to achieve an improved technological result, the claimed attention manager uses specific instructions to achieve an improved technological result (e.g., less unused display capacity) in conventional industry practice (e.g., use of a display device). *See McRO*, 837 F.3d at 1316 ("The claim uses the limited rules in a process specifically designed to achieve an improved technological result in conventional industry practice."). Accordingly, as in *McRO*, the asserted claims of the '652 patent are directed to patent-eligible subject matter.

D. The Asserted Claims Include an Inventive Concept

This Court need not reach step two because the '652 claims are not directed to an abstract idea for the above reasons. However, even if the district court were correct that the claims are directed to the abstract idea of "providing information to a person without interfering with the person's primary activity," a point Interval vigorously contests, the

claims provide an inventive concept that is significantly more than that abstract idea. Appx5. First, the idea of combining user-specified content data of interest with the primary interaction on the computer display device is a significant improvement to computer display devices. Second, as the PTO recognized, including instructions allowing the user to designate the content of interest for displaying in unused areas of a display device constitutes an inventive concept. Third, the claims implicate a distributed architecture that improves upon prior, self-contained solutions, while locally controlling and customizing the content of data presented to users. Fourth, the programmed instructions, as a whole, constitute a technological improvement that adds significantly more than merely presenting information to a user.

1. The Claims Provide a Technological Improvement That Is Rooted in Computer Display Technology

The '652 claims contain an inventive concept because they are rooted in computer technology and provide a technological improvement for acquiring and presenting information of interest to a user on a computer display device. *See DDR*, 773 F.3d at 1257 (finding patent eligible claims "rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks"). In particular, the '652 claimed inventions improve computer display devices

by combining the acquired information with the user's primary display interaction. The acquired information of interest is displayed within the unused capacity of the display device, either in regions of the display screen not occupied by the user's primary activity, or during periods of user inactivity.

The technological improvement is specific to software controlling display devices, which is clearly technological in nature. Indeed, this Court's construction of "attention manager" clearly recognizes the invention is limited to a system for displaying images on a display screen. *See Interval Licensing*, 766 F.3d at 1376 (construing "attention manager" as "a system that displays images to a user either when the user is not engaged in a primary interaction or in an area of the display screen that is not used by the user's primary activity"). Further, the operation of the attention manager—per this Court's construction—triggers specifically on whether the user is engaged in a primary interaction (i.e., *using a computer*).

Stated differently, the claimed attention manager simply cannot operate divorced from a computer display device. The instant case is not like *Mortgage Grader, Inc. v. First Choice Loan Servs.*, where the "series of steps covered by the asserted claims . . . could all be performed by humans without a computer." *See* 811 F.3d 1314, 1324 (Fed. Cir. 2016)

(noting that the claimed process for assisting borrowers in obtaining loans was easily separated from the claimed computer implementation). Nor is it analogous to *Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A.*, where the patentee merely added a "generic scanner and computer to perform well-understood, routine, and conventional activities commonly used in industry" to a patent otherwise directed at data processing. 776 F.3d 1343, 1348 (Fed. Cir. 2014). Rather, the '652 invention focuses on displaying customized content data based on the manner in which a user is engaged with a primary application executing on his/her computer.

Without the '652 invention, users must expend the time and energy to locate the information they wish to receive from information sources, and then view that information on their computer screen. Users must disengage from their primary activity (which may be a word-processing or spreadsheet application) in order to obtain and view the information they seek. In effect, locating and displaying the information of interest becomes the primary interaction of the user, rather than the word-processing or spreadsheet application on which the user had been focused before becoming distracted.

The '652 claimed attention manager allows the user to stay focused on the primary interaction—the word-processing or spreadsheet

application—while working in the background to acquire and display the information of interest to the user. The '652 invention then displays the acquired information in combination with the word-processing or spreadsheet (or other) application during available time periods or spatial regions. This ability to combine the display of customized information with images related to a user's primary application provides multiple improvements that add significantly more than the abstract idea noted by the district court. First, it optimizes the utility of display devices by taking advantage of previously unused display capacity. Second, it enhances the user's computer experience by *automatically* providing customized information of interest to the user that can be viewed in conjunction with the user's primary computer application. *See* Appx33 (5:13-16) ("The attention manager provides information in which a user has expressed an interest and, importantly, information that the user might not otherwise expend adequate energy to obtain."). Third, it allows the user to remain engaged with the primary interaction even as the information of interest is displayed, with minimal disruption.

In *DDR*, this Court affirmed the eligibility of claims directed to "generating a composite web page that combines certain visual elements of a 'host' website with content of a third-party merchant." 773 F.3d at 1248. At a high level, the representative *DDR* claim (claim 19 of the '399

patent) recited a *computer data store* and a *computer server*. The computer data store included webpages with links to third-party commerce objects; the computer server processed activation of the links and responded by generating a composite web page illustrating the third-party product within an environment that mimics the original page containing the link. *See id.* at 1249-50. Thus, the *DDR* claim recited conventional computer components such as a computer server and computer data storage, with instructions programmed into the computer server. The *DDR* Court determined that the recited instructions provided a solution that was "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks." *Id.* at 1257.

The instant claims are similar to those held patent-eligible in *DDR* and provide a similar type of inventive concept. First, the claims recite a particular combination of instructions that implement the claimed attention manager. Further, this combination of instructions operates to provide the user with composite information on the display device, advantageously combining both the primary interaction display with information of interest to the user. The attention manager improves existing computer technology by providing the user with an enhanced display device experience that includes a composite of information not

previously available. The *DDR* Court stated: "It is this challenge of retaining control over the attention of the customer in the context of the Internet that the '399 patent's claims address." *Id.* at 1258. In similar fashion, the '652 patent claims focus on the challenge of making use of a user's *peripheral* attention by displaying information of interest in the unused capacity of the display space. Accordingly, just as the claims in *DDR*, the instant claims are patent-eligible.

2. The PTO Recognized that the Ability to Designate the Specific Information to Acquire Is a Significant Improvement Over the Prior Art

While the inventive concept discussed immediately above focuses on how the acquired information is displayed, the second inventive concept focuses on the particular content to be displayed, and in particular, the ability of the user to control that selection. The '652 claims at issue here all include the requirement of "user interface installation instructions," which according to the appropriate claim construction, "enables a person to request the set of content data from a specified source of information." *See* Appx786-787. The ability to designate and acquire content of interest for display in a screen saver or wallpaper embodiment constitutes an inventive concept that adds significantly

more than merely providing information to a person without interfering with the person's primary activity.

During the original prosecution of the '652 patent application, Interval distinguished prior art systems based on the user interface installation instruction. *See* Appx1306 (stating that Judson fails to teach or suggest the "user interface installation instructions" limitation).

During Reexamination of the '652 patent, Interval again distinguished claims 15-18 from the prior art based upon the user's ability to control the content selection in both its first and second reexamination responses. *See* Appx2982-2991 (First Office Action Response), Appx1627-1629 (Response to Final Office Action). Specifically, Interval noted that the user interface installation instructions "enable[ ] the user to choose specific information of interest" and also "enable the user to control her personal user experience by using the user interface to indicate interest in particular information from a specific source." Appx2983-2984 (emphases omitted). *See also* Appx1628-1629 ("the user interface ***must allow the user to request content data***") (emphasis in original). In contrast, the prior art Kjorsvik system taught a centralized, network-level management system. Appx2985. The Examiner agreed that Kjorsvik did not include the claimed user interface installation instructions:

> The rejections of claims 15-18 over Kjorsvik, alone or in combination with another reference, are withdrawn because Kjorsvik does not disclose the claimed 'user interface' because Kjorsvik's messenger module does not allow a person to request the set of content data from the specified information source as required by the claims.

Appx1610.

The ability of the user to designate content from a specific information source that will be acquired and presented by the claimed attention manager constitutes an inventive step relative to conventional systems. A determination that this requirement is merely conventional flies in the face of the intrinsic record of the '652 patent.

3. The Claimed System Architecture Is Inventive

The '652 claims are directed to an attention manager architecture that optimizes the use of a display device in a multi-tiered, networked system as depicted in Figure 2 of the patent, shown below.[14]

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[14] Defendants have suggested that Interval is foreclosed from arguing that the attention manager architecture is distributed. *See* Appx867 (citing claim construction briefing, Dkt. Nos. 300 and 301). This is incorrect. Interval's arguments against constructions requiring "every content provider take an active role in 'defining' or 'formulating' the content data or images therefrom," see Appx408, do not foreclose a distributed attention manager architecture.

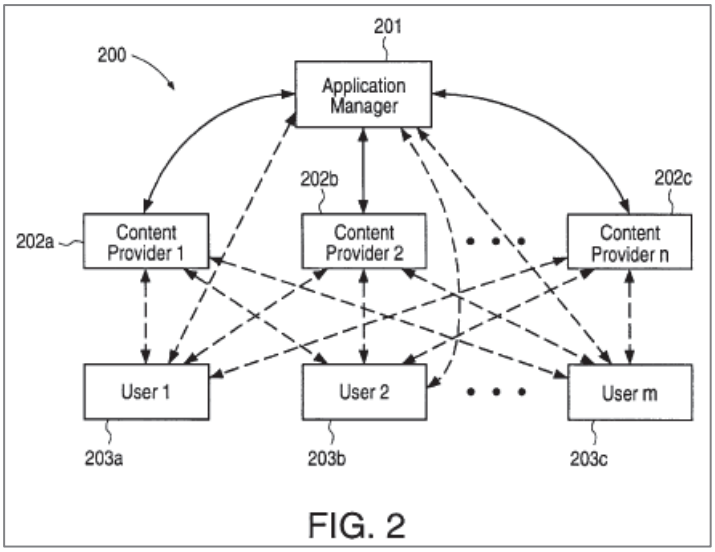


FIG. 2

The attention manager facilitates the dissemination of content data from content providers to users. Appx31 (1:24-27). This arrangement of content providers and users provides an improvement over the art, and represents an inventive concept. *See Amdocs*, No. 2015-1180, 2016 U.S. App. LEXIS 19593, at *30 (finding claims patentable that "purposefully arranges the components in a distributed architecture to achieve a technological solution to a technological problem"). Specifically, the '652 invention allows content data to be provided from remote sources, and to be updated as appropriate from those external sources to maintain current content data. But the specific data that is acquired and displayed to the user is controlled locally by the attention manager running on the content display system, to thereby allow the displayed information to be customized for each individual user based upon each user's preferences. *See* Appx31 (2:57-61), Appx32 (4:20-25), Appx47 (33:15-16). The ability to

balance the local control mechanism with remote data acquisition is a defining technological improvement of the '652 patented inventions.

The specification teaches that supporting information sources external to the attention manager program provides an improvement because it allows for access to a much more varied catalog of potential content data or information. *See* Appx33 (5:25-29) (noting that the user can choose information from "a wide variety of information sources"). In fact, the specification teaches that the lack of this capability was a limitation of conventional screen saver and desktop wallpaper approaches. *See* Appx31 (1:60-64) (describing prior solutions as "simple, self-contained computer application programs"). Further, this was a point of distinction over prior art for related claims during prosecution of the '652 patent. *See* Appx1299 (noting that Pirani does not permit content data to "be obtained from other devices via a computer network").

While the *content data* is acquired from external sources, the claims specify that the attention manager *instructions* are "for use by a content display system" and include "one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device." *See* Appx47 (33:15-20) (claim 18 preamble). These local attention manager instructions operate in conjunction to provide local control and

customization of the content data that is acquired and displayed to the user. The user identifies the content data of interest as part of the user interface installation instructions, and the identified content data is then retrieved by the acquisition instructions. *See* Appx47 (33:21-26) (claim 18, first and second limitations). The acquired content data is also updated as appropriate by the attention manager's content data update instructions. *See* Appx47 (34:7-10) (claim 18, fifth limitation). The acquired content data is scheduled for display by the attention manager to determine exactly which content data will be displayed (based in part on user preferences), the order and frequency of the content data, and the amount of time during which the content data is displayed. *See* Appx47 (34:1-6) (claim 18, third and fourth limitations), Appx47 (34:11-18) (sixth and seventh limitations). Thus, although the content data is acquired from external sources, the attention manager locally controls exactly which information is acquired and when and how it will be displayed to the user.

In *BASCOM*, this Court noted that "an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces." 827 F.3d at 1350. The Court found that the inventive concept in *BASCOM* was (1) installing filters at a location remote from the users while (2) still permitting customizable filtering for

each user. *See id.* Similarly, an inventive concept is described and claimed in the '652 patent that involves (1) acquiring content data from locations that are external to the attention manager while (2) locally customizing the content that is acquired and displayed to the user. The inventive concept here is analogous to that in *BASCOM*. The claims of the '652 patent implicate an architecture that maintains local customized control over the particular content data that is presented to the user, while allowing the content itself to be acquired from remote information sources. Like the invention in *BASCOM*, the '652 claims include an inventive concept that improves over conventional approaches, and thus the asserted claims are patent eligible.

4. The Program Instructions as a Whole Provide Inventive Improvements

Per *Enfish*, technological improvements may demonstrate patent eligibility under steps one or two. 822 F.3d at 1335; *see also BASCOM*, 827 F.3d at 1348. Accordingly, the discussion above regarding the improvements captured by the '652 claimed instructions as a whole applies equally to the "inventive concept" inquiry. *See supra* IV.C.4. These improvements add significantly more than just generically providing information to a person without interfering with the person's primary activity.

E. The '652 Claims Are Not Functional

The district court's analysis suggested that it found the claims patent ineligible, in part, because it considered the claims functional. *See* Appx8 ("And the claims do not recite how the attention manager performs the function of determining where to display images in the 'windowed' environment so that they do not interfere with the user's primary activity."). First, as a matter of law, this approach to conducting a § 101 analysis has recently been rejected by this court. *See Amdocs*, No. 2015-1180, 2016 U.S. App. LEXIS 19593, at *14 ("We commend the dissent for seeking a creative way of incorporating aspects of well-known doctrine in the search for what is an 'abstract idea,' but that is not the law, either in statute or in court decision."). Second, even if it were the law, under the facts of this case, the district court's suggestion is simply incorrect.

The instant claims are not functional or result-oriented because they recite specific instructions for operating the attention manager, as detailed above. *See supra* IV.C.2; *see also Amdocs*, 2016 U.S. App. LEXIS 19593, at *55-56 (Reyna, J., dissenting) ("[W]here the claim recites specific structure or function for accomplishing the desired goal in a particular way, the claim is more likely directed to a means than to the underlying abstract goal."). The Piernot declaration submitted during prosecution provided specific source code examples implementing many

of these specific instructions. *See supra* II.B.2 (detailing the Piernot declaration Exhibits). The district court's assessment of what the claims teach relied only on a snippet of the construction of the term "attention manager"; it ignored the specific claim limitations detailing the implementation of the attention manager and the descriptions of these limitations throughout the intrinsic record. Because the district court's suggestion is wrong on the facts of this case, it should be rejected. Additionally, even if the standard applied by the district court were proper, it was still incorrect to ignore the limitations of the '652 claims directed to specific structure and functions for operating the attention manager.

F. The Generic Data Management Cases Are Inapplicable

The Federal Circuit has, on multiple occasions, found that generic data management is not patentable. Interval's attention manager, however, is directed to more than just data management. It relates to the presentation of user-specified content data in a composite manner on a display device using the unused capacity of the display device.

In *Content Extraction*, the Court found that the claims-at-issue were directed to recognizing and storing data, and the patentee in that case admitted that its purported "inventive concept"—recitation of a scanner—was well-known in the art. 776 F.3d at 1347-48. This Court

held the claims patent-ineligible because the purported inventive concept did not involve "more than performance of 'well-understood, routine, [and] conventional activities previously known to the industry.'" *Id.* at 1347-48.

The '652 patent claims are different from those in *Content Extraction* because they do considerably more than gather, recognize, and store data. The attention manager not only acquires data of interest to a user, it creates a composite display on the user's display device that combines the acquired data with the user's primary interaction display. The attention manager does not simply gather and display data; rather, it targets the unused capacity of a user's display device to provide information of interest while permitting the user to continue focusing on his primary activity. In addition, the attention manager exerts localized control over the content of the data presented to the user, although the content data is itself acquired from remote sources that are external to the attention manager.

Similarly, the *Electric Power Group* court stated at step two that "merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas." *Elec. Power*

Grp., 830 F.3d at 1355. The invention in *Electric Power Group* merely presented the results of data aggregation. As discussed previously, the claims here do not merely select information for display. The invention optimizes the use of a computer display device by providing a multi-tiered architecture to facilitate the automatic provision of user-identified content data and by providing specific instructions for combining this data with the user's primary interaction, thus utilizing the unused capacity of the display device and occupying the user's peripheral attention. The attention manager improves the computer display device by automatically providing information within its unused capacity, and it enhances the user's experience by providing information of interest that the user might not otherwise expend the energy to obtain. This is considerably more than simply presenting the results of aggregating data.

In *Affinity Labs*, the claims were "directed to streaming regional broadcast signals to cellular telephones located outside the region served by the regional broadcaster." *Affinity Labs of Tex. v. DIRECTV, LLC*, 838 F.3d 1253, 1255 (Fed. Cir. 2016). This Court determined that the claims were directed to an abstract idea. *Id.* at 1258. It then found that the claims only recited the "generic features of cellular telephones, such as a storage medium and a graphical user interface, as well as routine

functions, such as transmitting and receiving signals, to implement the underlying idea." *Id.* at 1262. Unlike *Affinity Labs*, the advance here is not based on generic features of conventional computer components, but instead focuses on the attention manager's instructions that acquire information of interest to a user and automatically present a composite display experience whereby the content data is scheduled to display in combination with the user's primary activity on the display device. The improvement in how the information is selected, acquired, and scheduled for display in combination with the unused capacity of the display device is the essential advance claimed here, not the content itself.

Finally, the district court compared the claims at issue here to those in *buySAFE*, declaring that the claims in both are "purely conventional" because they are "implemented using only well-known, pre-existing and conventional computer equipment." Appx7-8. The *buySAFE* claims, however, involved "creating a contractual relationship—a 'transaction performance guaranty,'"—by simply sending and receiving the information over a computer network. *buySAFE*, 765 F.3d at 1355. Interval's specific instructions involve considerably more than simply sending and receiving information over a network. Rather, they involve creating a composite display for a computer user that combines the primary interaction display with information of interest within the

unused display capacity of the display device. Accordingly, the instant claims, which are directed to a technological improvement, are not analogous to those in *buySAFE*, which were directed to creating contractual relationships.

G. The Attention Manager's Specific Instructions Preclude Preemption Concerns

The claimed attention manager does not preempt all methods of presenting information to a user without distracting the user from his primary activity. While lack of preemption is not dispositive of whether a claim is patent-eligible, *see Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015), it is at least an important clue in the inquiry. *See Alice*, 134 St. Ct. at 2358 ("[T]he pre-emption concern . . . undergirds our § 101 jurisprudence."). Here, multiple limitations restrict the implementation of the attention manager, precluding any possibility of tying up "the basic tools of scientific and technological work." *Gottschalk*, 409 U.S. at 67.

First, the claimed invention is significantly different than a typical Internet browser application operating as the primary application that retrieves information requested by a user and displays that information for the user. The claimed attention manager operates in the background and only occupies the peripheral attention of the user in regions of the

display screen that are not used by the primary application, or during periods of user inactivity. Second, the claims require user interface installation instructions requiring that the attention manager provide a user interface that allows the user to "request the set of content data from a specific source of information." Accordingly, the asserted claims do not preempt devices that operate without requiring the user to specify the information source. Third, acquisition instructions require that the instructions acquire the set of content data from a specified information source. Systems in which the images for display are incorporated directly into the attention manager or in which data is acquired without any level of control by the user are beyond the scope of the claims.

Other instructions further limit the claimed attention manager, including at least the audit instructions, content data update instructions, content data scheduling instructions, and content display system scheduling instructions. An attention manager that does not have the capability to audit activity, does not have the capability to update previously acquired content data, or does not have the capability to schedule the content data or to mediate conflicts as required by the content display system scheduling instructions would not be foreclosed by the requirements of claim 18 or claims 15-17. Accordingly, the claimed attention manager does not preempt the development of other solutions

to display information to a user without distracting the user from his primary interaction.

V. CONCLUSION

For the reasons stated herein, Interval respectfully requests that the Court reverse the district court's holding that the claims are directed to abstract ideas that are not patent-eligible under 35 U.S.C. § 101.

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Respectfully submitted,

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ADDENDUM

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ADDENDUM
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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

INTERVAL LICENSING LLC, Plaintiff, v. AOL INC, et al., Defendants.	CASE NO. C10-1385-MJP ORDER GRANTING DEFENDANTS' MOTION FOR JUDGMENT ON THE PLEADINGS

THIS MATTER comes before the Court on Defendants' Motion for Judgment on the Pleadings. (Dkt. No. 372.) Having considered the Parties' briefing and all related papers, the Court GRANTS the motion.

Background

Plaintiff Interval Licensing, LLC brings suit against various defendants for patent infringement. (Dkt. No. 153.) Defendants AOL, Inc., Apple, Inc., Google, Inc., and Yahoo! Inc., now move for judgment on the pleadings, arguing that the asserted claims of U.S. Patent No. 6,034,652 ("the '652 patent") are invalid under 35 U.S.C. § 101 and Alice Corp. v. CLS

Bank Int'l, 134 S. Ct. 2347 (2014) because the claims are directed to an abstract idea and contain no inventive concept to render them patent eligible. (Dkt. No. 372.)

Plaintiff opposes the motion, arguing that the asserted claims of the '652 patent are valid because they are not abstract and include an inventive concept that enhances existing technology. (Dkt. No. 378.)

Discussion

I. Legal Standards

A. Judgment on the Pleadings

After the pleadings are closed, a party may move for judgment on the pleadings. Fed. R. Civ. P. 12(c). A judgment on the pleadings is properly granted when, taking all the allegations in the pleadings as true, the moving party is entitled to judgment as a matter of law. Milne ex rel. Coyne v. Stephen Slesinger, Inc., 430 F.3d 1036, 1042 (9th Cir. 2005).

B. Patent Invalidity under 35 U.S.C. § 101

Laws of nature, natural phenomena, and abstract ideas are not patentable. Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347, 2354 (2014). Otherwise, monopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it, thereby thwarting the primary objective of the patent laws. Id. (citing Mayo Collaborative Servs. v. Prometheus Labs., Inc., 132 S. Ct. 1289 (2012).) At the same time, courts must tread carefully in construing this exclusionary principle "lest it swallow all of patent law." Id.

Accordingly, in applying the § 101 exclusionary principle, courts must distinguish between patents that claim the "building blocks" of human ingenuity and those that integrate the building blocks into something more, thereby transforming them into a patent-eligible invention. Id. To distinguish patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible application of those concepts, courts first "determine whether the

claims at issue are directed to one of those patent ineligible concepts." Id. If so, courts then ask "what else is there in the claims before [them]." Id. To answer the second question, courts "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." Id. The Supreme Court characterizes the second step as a "search for an inventive concept," i.e. an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself. Id.

II. Step One: Patent-Ineligible Concept

The Court must first determine whether the claims at issue are directed to a patent-ineligible concept. The Parties agree that the asserted claims are directed to the operation of an "attention manager" system, but disagree about whether the attention manager system is a patent-ineligible abstract idea. (Dkt. Nos. 372 at 10-11, 378 at 13.)

Defendants argue the asserted claims are directed at the abstract idea of providing information to a person without interfering with the person's primary activity. (Dkt. No. 372 at 10-17.) In support of this contention, Defendants point to the Federal Circuit's construction of "attention manager" as "a system that displays images to a user either when the user is not engaged in a primary interaction or in an area of the display screen that is not used by the user's primary activity." (Id. (quoting Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1376 (Fed. Cir. 2014)).) Defendants argue that the "attention manager" as construed recites the idea of providing information to a user at a certain time or location without restricting how that result is to be accomplished, therefore doing nothing more than reciting the abstract idea of providing information to a person without interfering with the person's primary activity. (Dkt. No. 372 at

10-17.) Defendants argue that the claims recite instructions for acquiring and requesting information, for scheduling the display of information, and for displaying the information, and that these are basic and long-practiced acts used by humans to communication information. (Id.)

Interval argues that the claims are "directed to the operation of an attention manager system," which, as construed by the Federal Circuit, is a not an abstract idea but rather a "multi-tiered, networked architecture of computers that communicates in a predefined manner to facilitate the automatic provision of information from multiple content providers to an interested user in a[] non-invasive manner." (Dkt. No. 378 at 13-22.) Interval argues that multiple claim elements are non-abstract, that Defendants' analogies are inapplicable, and that the tasks performed by the system are "not the sort of mental process that the Supreme Court has found to be an exception to the general rule of patent eligibility." (Id. at 13-14 (citing Gottschhalk v. Benson, 409 U.S. 63 (1972).)

The Court finds that the asserted claims are directed to the abstract idea of providing information to a person without interfering with the person's primary activity. This basic and longstanding practice can be found in, for example, a television station's use of a breaking news ticker across the bottom of the screen. The text-only news ticker provides information to viewers without interfering with the primary activity: the main story then being reported by the on-screen news anchor. Similarly, a lawyer's legal assistant may provide her with messages or mail in a manner that does not interfere with her primary activity: participating in a conference call. This could be accomplished at a certain time (delivering the message between telephone calls) or in a certain location (placing the message in the corner of her desk).

Interval's arguments that multiple individual claim elements are non-abstract are unavailing. See Internet Patents Corp. v. Active Network, Inc., 790 F.3d 1343, 1346 (Fed. Cir.

2015) ("Under step one of Mayo/Alice, the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject matter."). Interval's assertion that patent-ineligible abstract ideas can be found "only where the claims involve mathematical algorithms or business methods involving fundamental economic practices" is also incorrect. As the Supreme Court explained in Alice, the operative question is whether or not the patent claims are directed toward an abstract idea, and not whether or not the invention could be classified into one of Plaintiff's categories. Alice, 134 S. Ct. at 2356-57; see also Internet Patents Corp., 790 F.3d at 1348-49. Finally, the Court rejects Interval's attempts to remove the claims from the realm of the abstract by including unclaimed elements or importing requirements it previously argued against. (See Dkt. Nos. 300, 341.)

The Court finds that elements of all of the claims at issue (claims 15-18 of the '652 patent) are directed towards the same abstract idea—providing information to a person without interfering with the person's primary activity, as discussed above—whether analyzed individually or as an ordered combination. Claims 15 and 18 are representative.

III. Step Two: Inventive Concept

Having determined that the claims are directed to an abstract idea, the Court must now examine the elements of the claims to determine whether they contain an "inventive concept" sufficient to transform the claimed abstract idea into a patent-eligible concept. Defendants argue that the claims contain no inventive concept beyond providing information to a person without interfering with the person's primary activity using computers and computerized displays. (Dkt. No. 372 at 17-26.) Interval argues the claims contain an inventive concept that solves prior art problems by "improv[ing] the provision of content data in a networked environment where users are individually associated with display devices." (Dkt. No. 378 at 22-25.)

A claim that recites an abstract idea must include "additional features" to ensure that the claim is more than a drafting effort designed to monopolize the abstract idea. Alice, 134 S.Ct. at 2357. Mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention, meaning that if a patent's recitation of a computer amounts to a mere instruction to implement an abstract idea on a computer, the claims fail to be patent eligible. Id. at 2358. Given the ubiquity of computers, wholly generic computer implementation is not generally the sort of "additional feature" that provides any practical assurance that the process is more than a drafting effort designed to monopolize the abstract idea itself. Id.

The fact that a computer necessarily exists in the physical, rather than purely conceptual, realm, is beside the point. Id. at 2358. Otherwise, computer implementation would allow applicants to claim any principle of the physical or social sciences by reciting a computer system configured to implement the relevant concept. Id. at 2359.

In Alice, the Supreme Court framed the relevant question at step two as "whether the claims here do more than simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer." Alice, 134 S. Ct. at 2359. The Supreme Court held that the Alice patents did not do more because "[t]aking the claim elements separately, the function performed by the computer at each step of the process is purely conventional." Id. (internal quotation marks omitted). The Supreme Court found that using a computer for electronic recordkeeping was "one of the most basic functions of a computer" and that use of a computer to obtain data, adjust account balances, and issue automated instructions are uses that are "well-understood, routine, conventional activities previously known to the industry." Id. The Supreme Court then considered the claims as an ordered combination and found that the claims "simply recite the concept of intermediated settlement as performed by a generic

computer." Id. In making that finding, the Court noted that the claims did not purport to improve the functioning of the computer itself, and did not "effect an improvement in any other technology or technical field." Id. The Court rejected the petitioner's arguments that its system claims recited "specific hardware" configured to perform "specific computerized functions" because the claims described only "purely functional and generic" hardware—in other words, because nearly every computer will include a "communications controller" and a "data storage unit" capable of performing basic calculation, storage, and transmission functions, "none of the hardware recited by the systems claims offers a meaningful limitation beyond generally linking the use of the method to a particular technological environment, that is, implementation via computers." Id.

The Federal Circuit has also shed light on the requirement at step two that the claims contain an additional inventive concept that transforms an abstract idea into a patent-eligible invention. In buySAFE, Inc. v. Google, Inc., 765 F.3d 1350 (Fed. Cir. 2014), the Federal Circuit found that the claims' invocation of computers added no inventive concept because the computer functionality was generic—the computer received a request for a guarantee and transmitted an offer of guarantee in return—and because the transmission of information over a network was "not even arguably inventive." 765 F.3d at 1355. The Federal Circuit found that the claims' narrowing to cover only online transactions was "an attempt to limit the use of the abstract guarantee idea to a particular technological environment, which has long been held insufficient to save a claim in this context." Id. (internal quotation marks omitted).

The Court finds that the elements of the asserted claims are purely conventional and do no more than apply the abstract idea of providing information to a person without interfering with the person's primary activity in the particular technological environment of networked

computers. The claims are implemented using only well-known, pre-existing and conventional computer equipment. (See, e.g., '652 patent at 1:39-55, 3:19-31.) While Interval identifies previously-existing "problems" addressed by the attention manager in the technological environment of networked computers using "windowed, multitasking operating systems," Interval never clearly articulates what exactly the inventive concept is that is contained in the asserted claims. (See Dkt. No. 378 at 23-25.) Additionally, the claims as construed are not limited to using unused space on a screen with windows because the screensaver embodiment is not related to unused spatial capacity. And the claims do not recite how the attention manager performs the function of determining where to display images in the "windowed" environment so that they do not interfere with a user's primary activity. See Internet Patents Corp., 790 F.3d at 1348. Details from the specification that are not found in the claims cannot provide a missing inventive concept. See Dealertrack, Inc. v. Huber, 674 F.3d 1315, 1334 (Fed. Cir. 2012).

As the Supreme Court explained in Alice, Parker v. Flook, 437 U.S. 584 (1978), stands for the proposition that the prohibition on patenting abstract ideas cannot be circumvented by attempting to limit the use of the idea to a particular technological environment. Alice, 134 S. Ct. at 2358; see also buySAFE, 765 F.3d at 1355 (claims' narrowing to cover only online transactions was "an attempt to limit the use of the abstract guarantee idea to a particular technological environment, which has long been held insufficient to save a claim in this context"). Analyzing the claim elements here individually or as an ordered combination yields the same result: the patents do not contain an inventive concept sufficient to transform the abstract idea into a patent-eligible application. Instead, the claims offer nothing more than a generic, high-level description of an abstract idea that can be implemented with nothing more

than generic, pre-existing computer functionality. Accordingly, the asserted claims of the '652 patent are invalid.

Conclusion

The Court finds that the asserted claims of the '652 patent are invalid under 35 U.S.C. § 101 and Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347 (2014), because the claims are directed to an abstract idea and contain no inventive concept to render them patent eligible. Accordingly, Defendants' Motion for Judgment on the Pleadings is GRANTED. The Parties are ORDERED to submit an updated joint status report advising the Court in writing as to how this case will proceed in light of this ruling no later than twenty-one (21) days from the date of this order.

The clerk is ordered to provide copies of this order to all counsel.

Dated this 16th day of June, 2016.

Marsha J. Pechman
United States District Judge

UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

INTERVAL LICENSING LLC,

Plaintiff,

v.

AOL, INC., et al.,

Defendants.

JUDGMENT IN A CIVIL CASE

CASE NUMBER: C13-263-MJP

CASE NUMBER: C13-264-MJP

CASE NUMBER: C13-265-MJP

CASE NUMBER: C13-266-MJP

___ **Jury Verdict**. This action came before the Court for a trial by jury. The issues have been tried and the jury has rendered its verdict.

X **Decision by Court**. This action came to consideration before the Court. The issues have been considered and a decision has been rendered.

THE COURT HAS ORDERED THAT

Based on this Court's ruling on Defendants' Motion for Judgment on the Pleadings (Docket Number 381), the Court hereby enters Final Judgment in favor of AOL, Inc.; Apple, Inc.; Google Inc.; and Yahoo!, Inc. (Defendants) in Case Nos. C13-263MJP, C13-264MJP, C13-265MJP, and C13-266MJP, respectively.

It is hereby ORDERED that:

(1) based on the Court's ruling on Defendants' Motion for Judgment on the Pleadings (Docket Number 381, Case No. C10-1385MJP), claims 15, 16, 17 and 18 of U.S. Patent No.

6,034,652 (the "'652 patent") are invalid for lack of patentable subject matter under 35 U.S.C. § 101;

(2) Final Judgment is entered in favor of AOL, Inc.; Apple, Inc.; Google Inc.; and Yahoo!, Inc. in Case Nos. C13-263MJP, C13-264MJP, C13-265MJP, and C13-266MJP, respectively;

(3) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. AOL, Inc., No. C13-263MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case;

(4) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Apple, Inc., No. C13-264MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case;

(5) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Google Inc., No. C13-265MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case; and

(6) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Yahoo!, Inc., No. C13-266MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case.

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Dated July 22, 2016.

William M. McCool
Clerk of Court

s/Paula McNabb
Deputy Clerk

UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

INTERVAL LICENSING LLC,

Plaintiff,

v.

AOL, INC., et al.,

Defendants.

JUDGMENT IN A CIVIL CASE

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CASE NUMBER: C13-264-MJP

CASE NUMBER: C13-265-MJP

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(4) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Apple, Inc., No. C13-264MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case;

(5) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Google Inc., No. C13-265MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case; and

(6) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Yahoo!, Inc., No. C13-266MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case.

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Dated July 22, 2016.

William M. McCool
Clerk of Court

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UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

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(4) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Apple, Inc., No. C13-264MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case;

(5) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Google Inc., No. C13-265MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case; and

(6) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Yahoo!, Inc., No. C13-266MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case.

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Dated July 22, 2016.

William M. McCool
Clerk of Court

s/Paula McNabb
Deputy Clerk

UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON
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(4) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Apple, Inc., No. C13-264MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case;

(5) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Google Inc., No. C13-265MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case; and

(6) all of Defendant's counterclaims asserted in Interval Licensing, LLC v. Yahoo!, Inc., No. C13-266MJP, are dismissed without prejudice and Defendant shall have the right to assert any and all defenses and counterclaims to any claim for infringement of the '652 patent in this or any future case.

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Dated July 22, 2016.

William M. McCool
Clerk of Court

s/Paula McNabb
Deputy Clerk

US006034652A

United States Patent [19]

Freiberger et al.

[11] **Patent Number: 6,034,652**

[45] **Date of Patent: *Mar. 7, 2000**

[54] **ATTENTION MANAGER FOR OCCUPYING THE PERIPHERAL ATTENTION OF A PERSON IN THE VICINITY OF A DISPLAY DEVICE**

[75] Inventors: **Paul A. Freiberger**, San Mateo, Calif.; **Golan Levin**, Staten Island, N.Y.; **David P. Reed**, Atherton, Calif.; **Marc E. Davis**, San Francisco, Calif.; **Neal A. Bhadkamkar**; **Philippe P. Piernot**, both of Palo Alto, Calif.; **Todd A. Agulnick**, San Francisco, Calif.; **Sally N. Rosenthal**, Palo Alto, Calif.; **Giles N. Goodhead**, Los Angeles, Calif.

[73] Assignee: **Interval Research Corporation**, Palo Alto, Calif.

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: **08/620,641**

[22] Filed: **Mar. 22, 1996**

[51] **Int. Cl.**[7] **G09G 5/12**; G09G 5/14; G06F 15/16

[52] **U.S. Cl.** **345/2**; 345/115; 709/218

[58] **Field of Search** 345/2, 115, 116, 345/302, 326; 707/10, 104, 501; 395/200.47, 200.48, 200.49; 709/217, 218, 219

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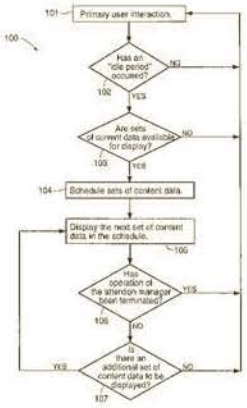
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Primary Examiner—Jeffery Brier
Attorney, Agent, or Firm—David R. Graham

[57] **ABSTRACT**

An attention manager presents information to a person in the vicinity of a display device in a manner that engages at least the peripheral attention of the person. The information is embodied by one or more sets of content data (e.g., video or audio data). Each set of content data is formulated by a content provider and made available for use by content display systems. Upon appropriate activation, each content display system displays images corresponding to the sets of content data in accordance with predetermined scheduling information. The attention manager makes use of "unused capacity" of the display device and the person's attention, providing information to the person that the person might not otherwise expend adequate energy to obtain. The attention manager also affords an opportunity to content providers to disseminate their information to people that are interested in receiving such information, enabling the content providers to provide better directed information dissemination, as well as providing access to the previously unused attention capacity of those interested people.

18 Claims, 8 Drawing Sheets



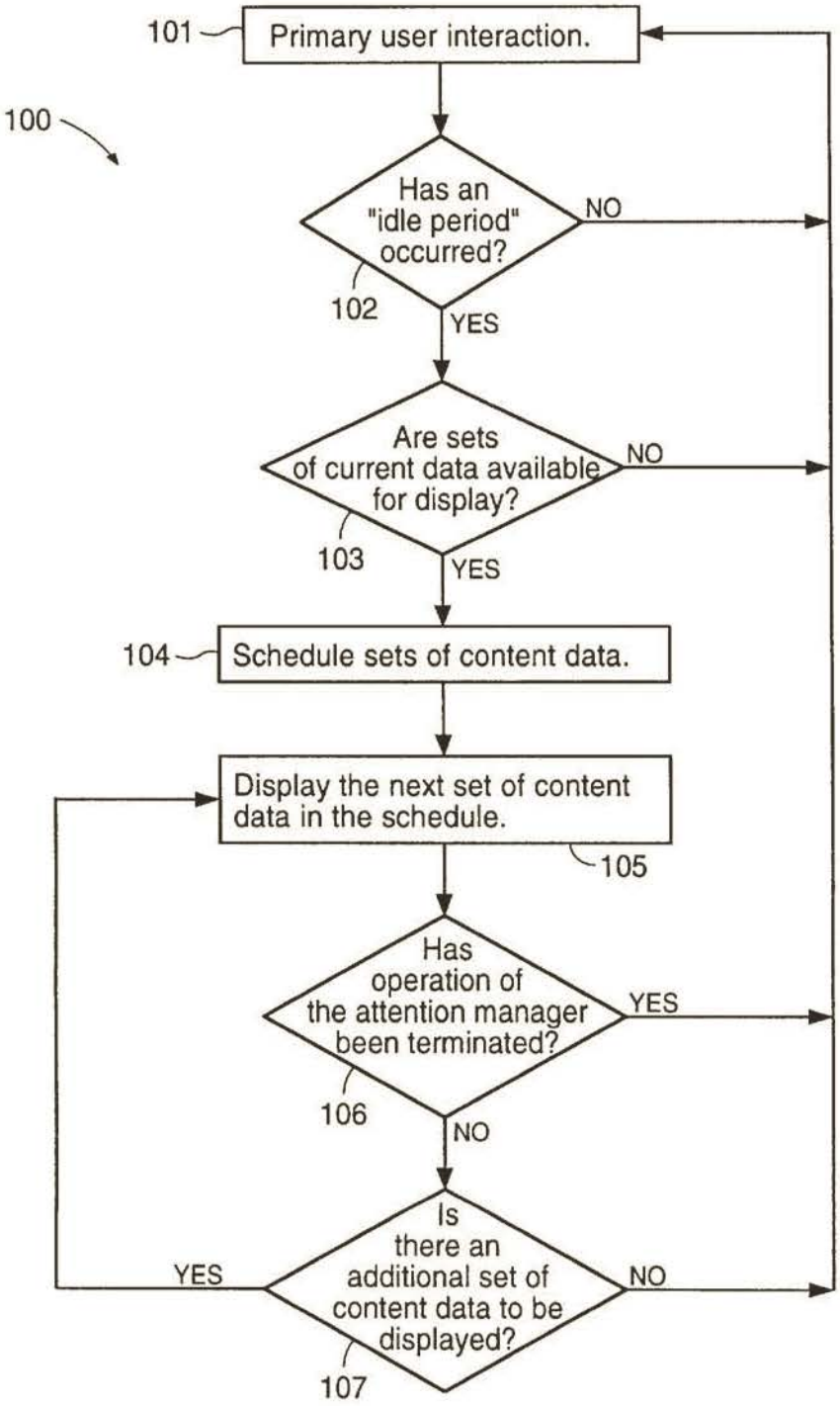

100
101
Primary user interaction.
Has an "idle period" occurred?
NO
102
YES
Are sets of current data available for display?
NO
103
YES
104
Schedule sets of content data.
Display the next set of content data in the schedule.
105
Has operation of the attention manager been terminated?
YES
106
NO
Is there an additional set of content data to be displayed?
YES
NO
107

FIG. 1

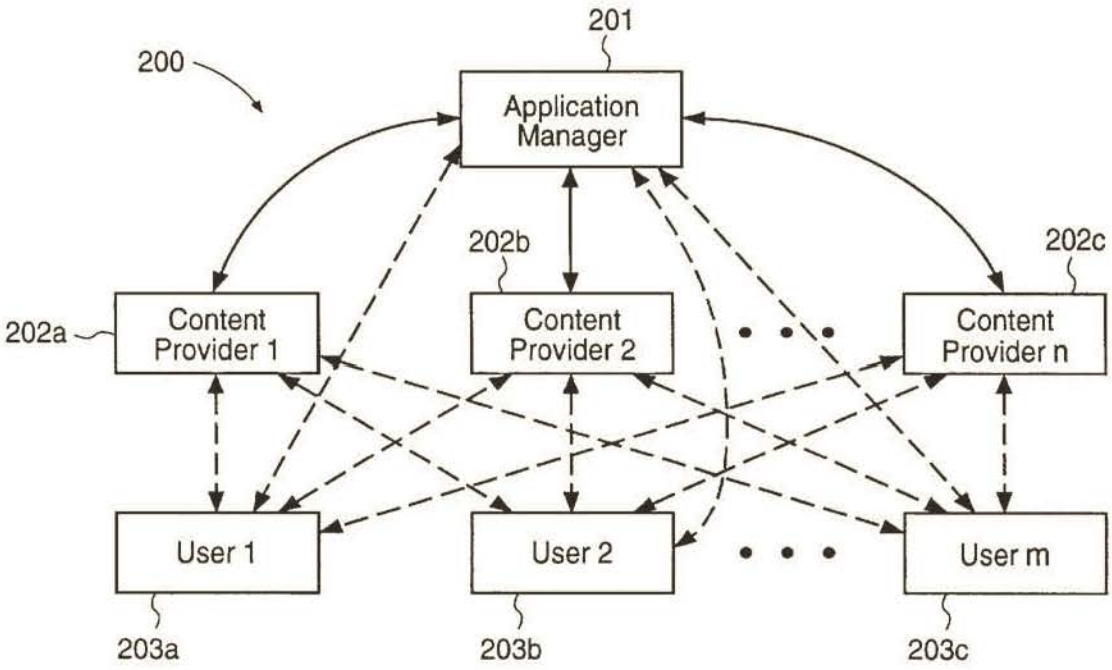

200
201
Application Manager
202a
Content Provider 1
202b
Content Provider 2
202c
Content Provider n
User 1
User 2
User m
203a
203b
203c

FIG. 2

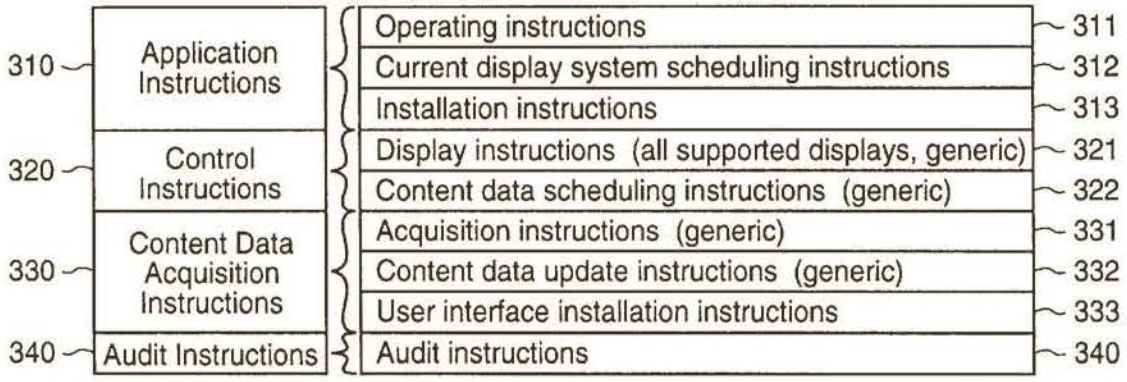


FIG. 3A

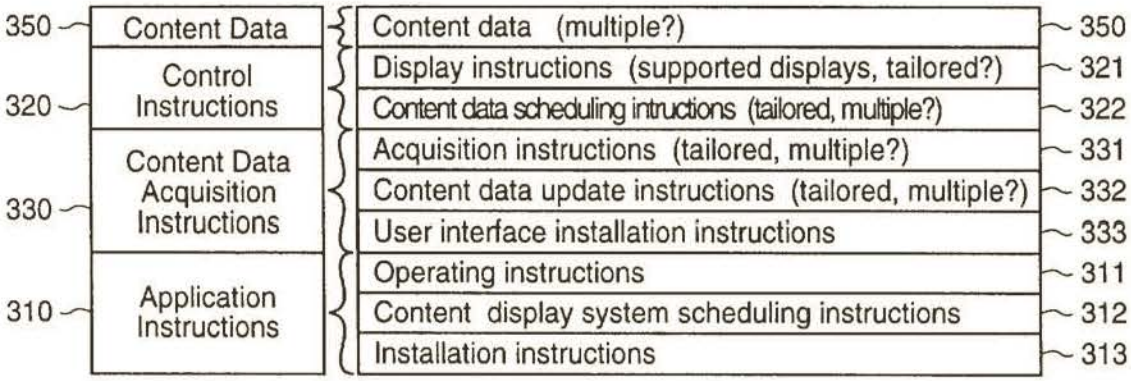


FIG. 3B

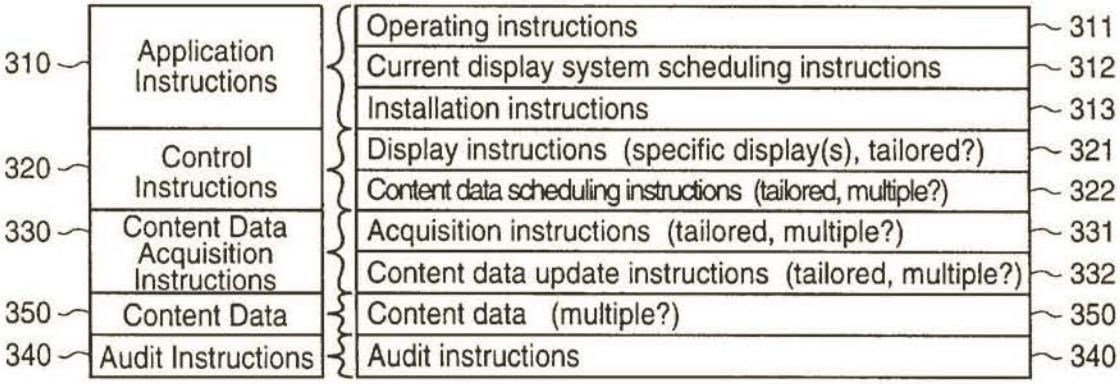


FIG. 3C

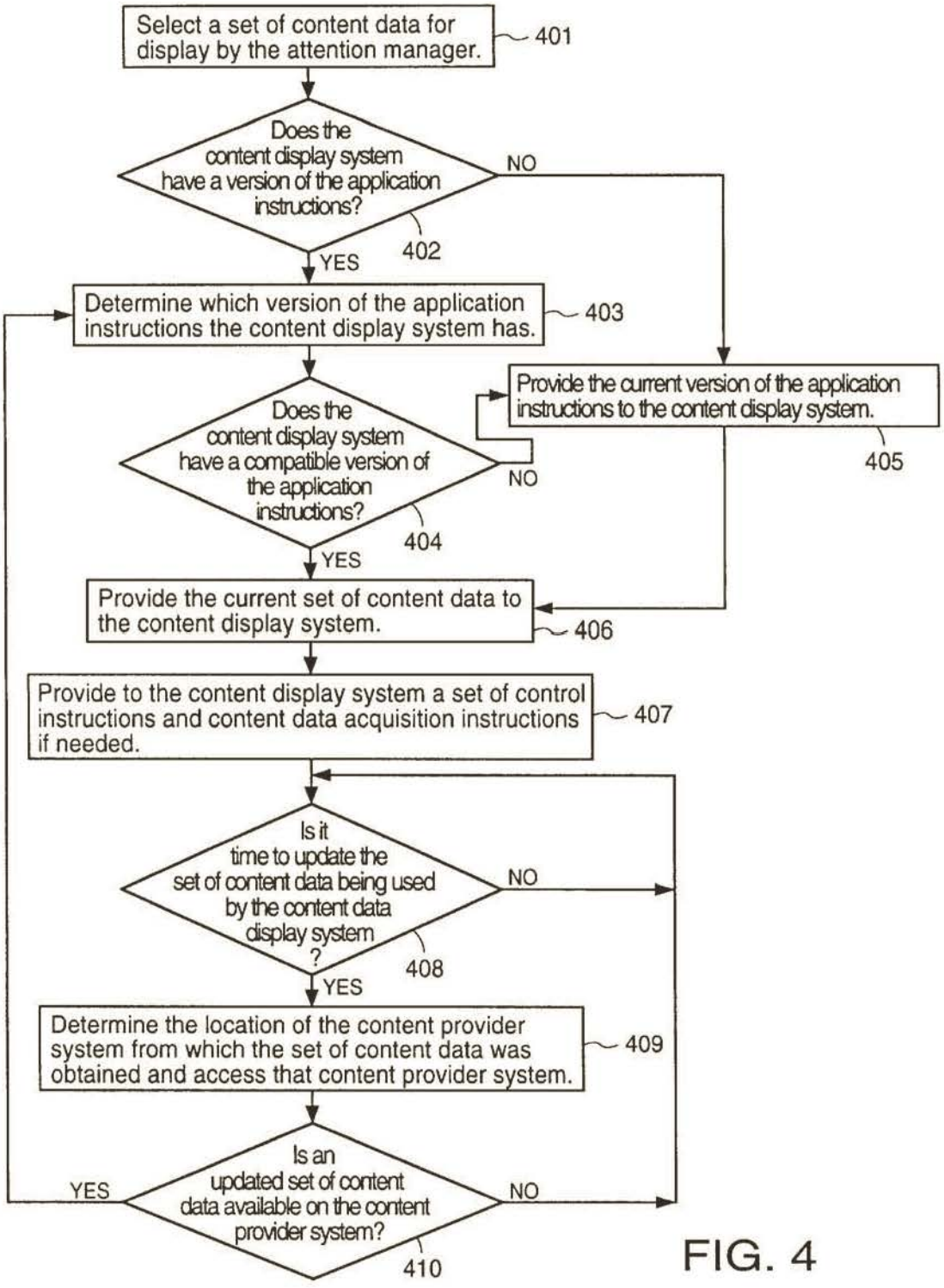

Select a set of content data for display by the attention manager.
401
Does the content display system have a version of the application instructions?
NO
YES
402
Determine which version of the application instructions the content display system has.
403
Provide the current version of the application instructions to the content display system.
405
Does the content display system have a compatible version of the application instructions?
NO
YES
404
Provide the current set of content data to the content display system.
406
Provide to the content display system a set of control instructions and content data acquisition instructions if needed.
407
Is it time to update the set of content data being used by the content data display system ?
NO
YES
408
Determine the location of the content provider system from which the set of content data was obtained and access that content provider system.
409
Is an updated set of content data available on the content provider system?
YES
NO
410

FIG. 4

FIG. 5A

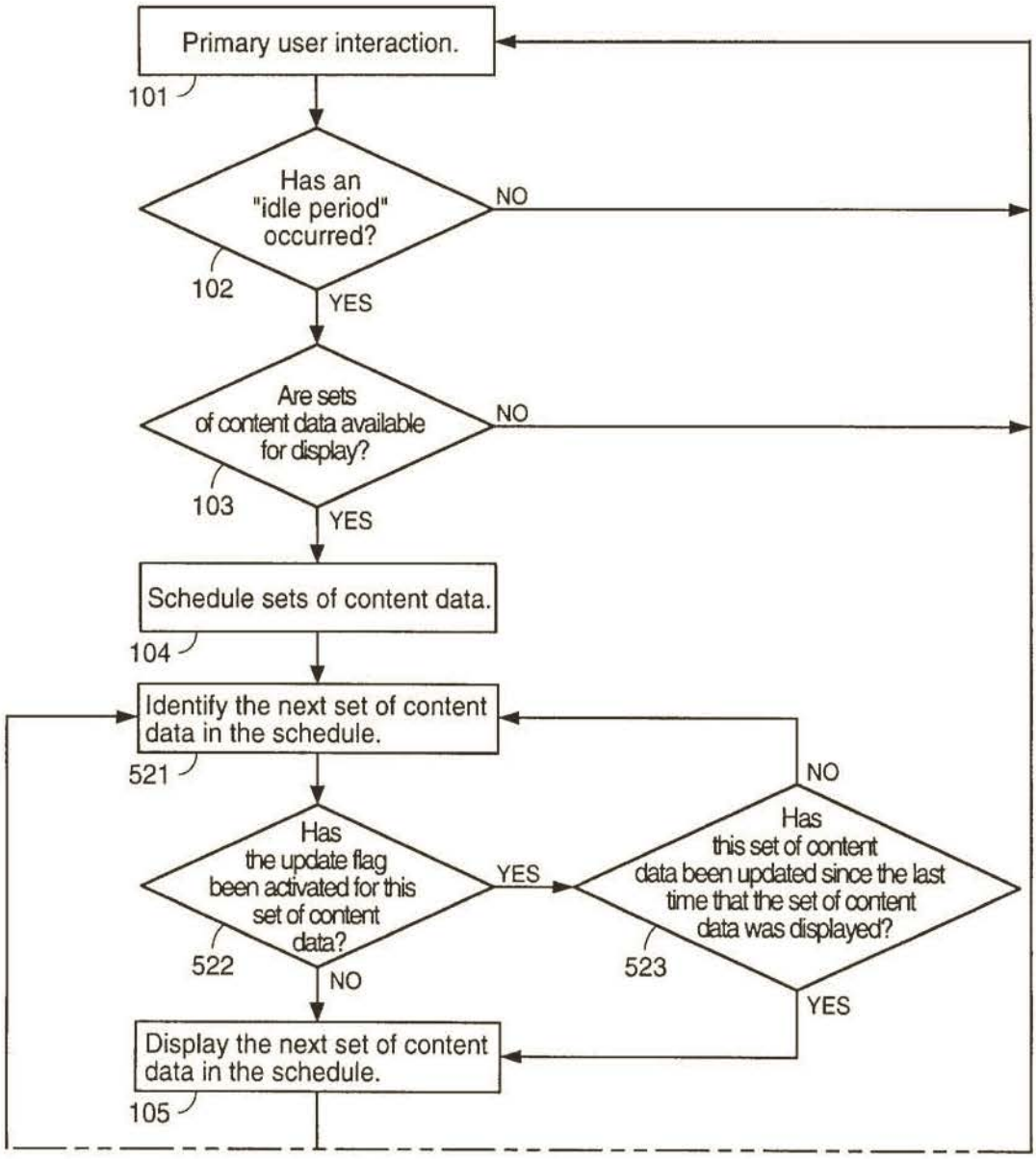
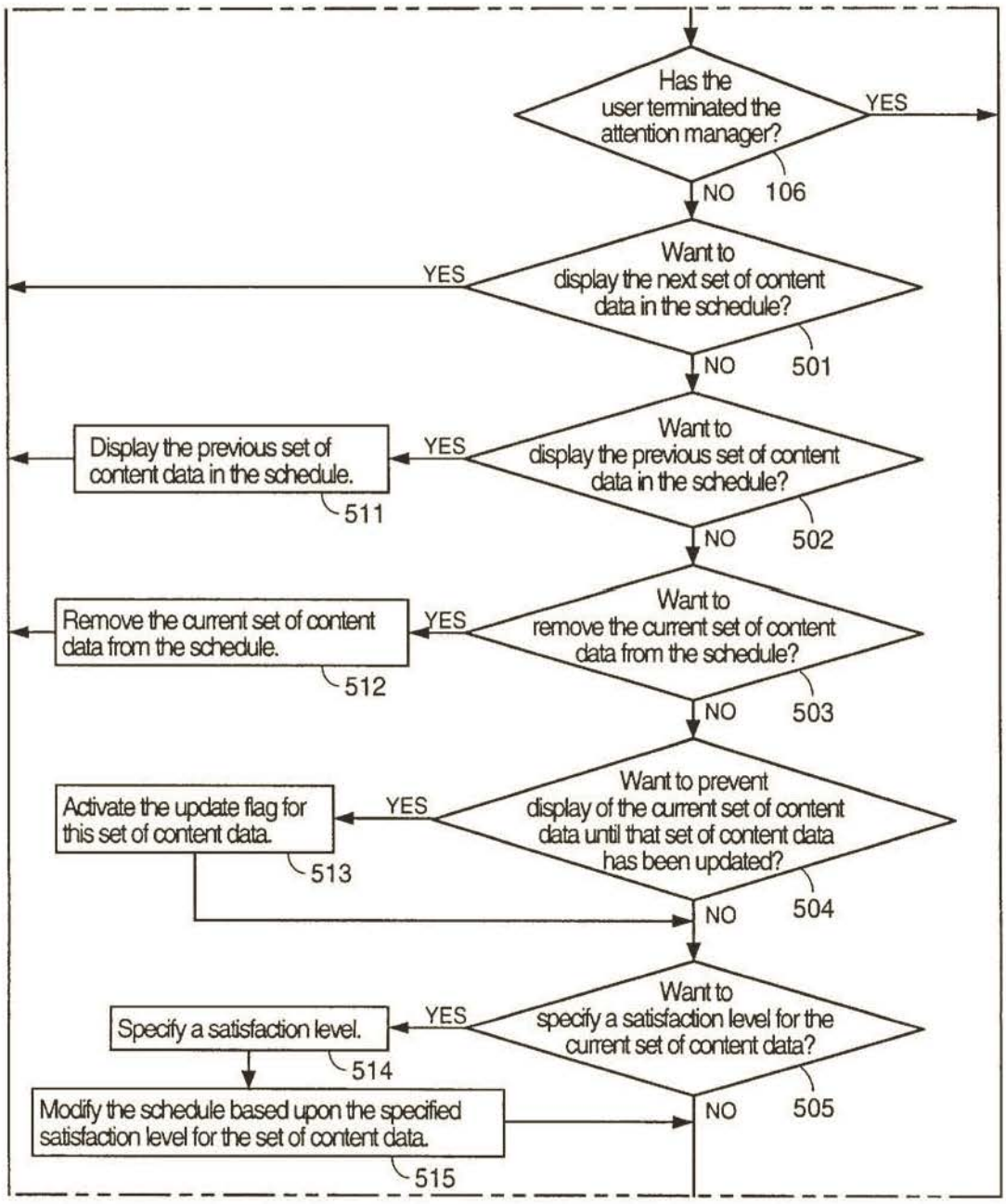

Primary user interaction.
101
Has an "idle period" occurred?
NO
102
YES
Are sets of content data available for display?
NO
103
YES
Schedule sets of content data.
104
Identify the next set of content data in the schedule.
521
Has the update flag been activated for this set of content data?
YES
522
NO
Has this set of content data been updated since the last time that the set of content data was displayed?
NO
523
YES
Display the next set of content data in the schedule.
105

FIG. 5B


Has the user terminated the attention manager?
YES
NO
106
Want to display the next set of content data in the schedule?
YES
NO
501
Want to display the previous set of content data in the schedule?
YES
Display the previous set of content data in the schedule.
511
NO
502
Want to remove the current set of content data from the schedule?
YES
Remove the current set of content data from the schedule.
512
NO
503
Want to prevent display of the current set of content data until that set of content data has been updated?
YES
Activate the update flag for this set of content data.
513
NO
504
Want to specify a satisfaction level for the current set of content data?
YES
Specify a satisfaction level.
514
Modify the schedule based upon the specified satisfaction level for the set of content data.
515
NO
505

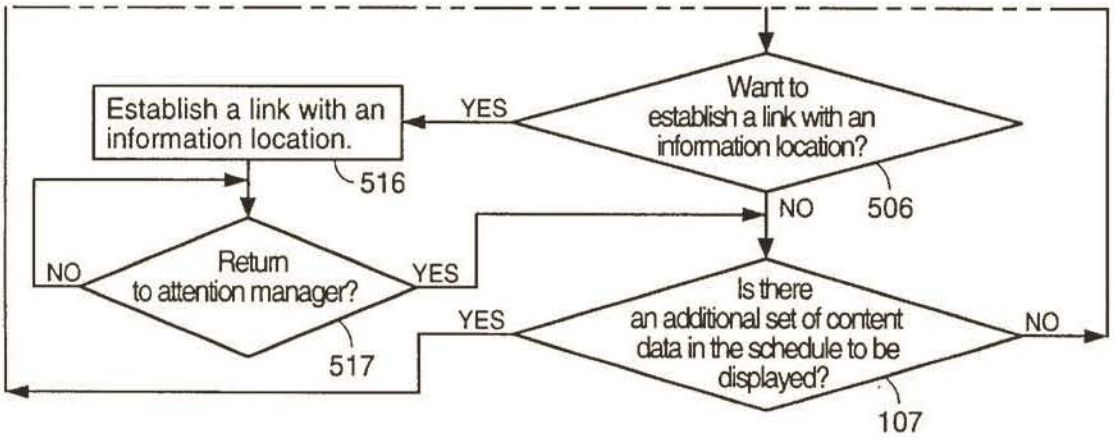

Want to establish a link with an information location?
YES
Establish a link with an information location.
516
NO
506
Return to attention manager?
NO
YES
517
YES
Is there an additional set of content data in the schedule to be displayed?
NO
107

FIG. 5C

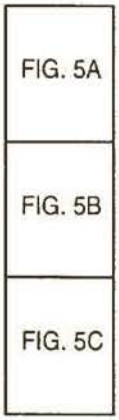

FIG. 5A
FIG. 5B
FIG. 5C

FIG. 5

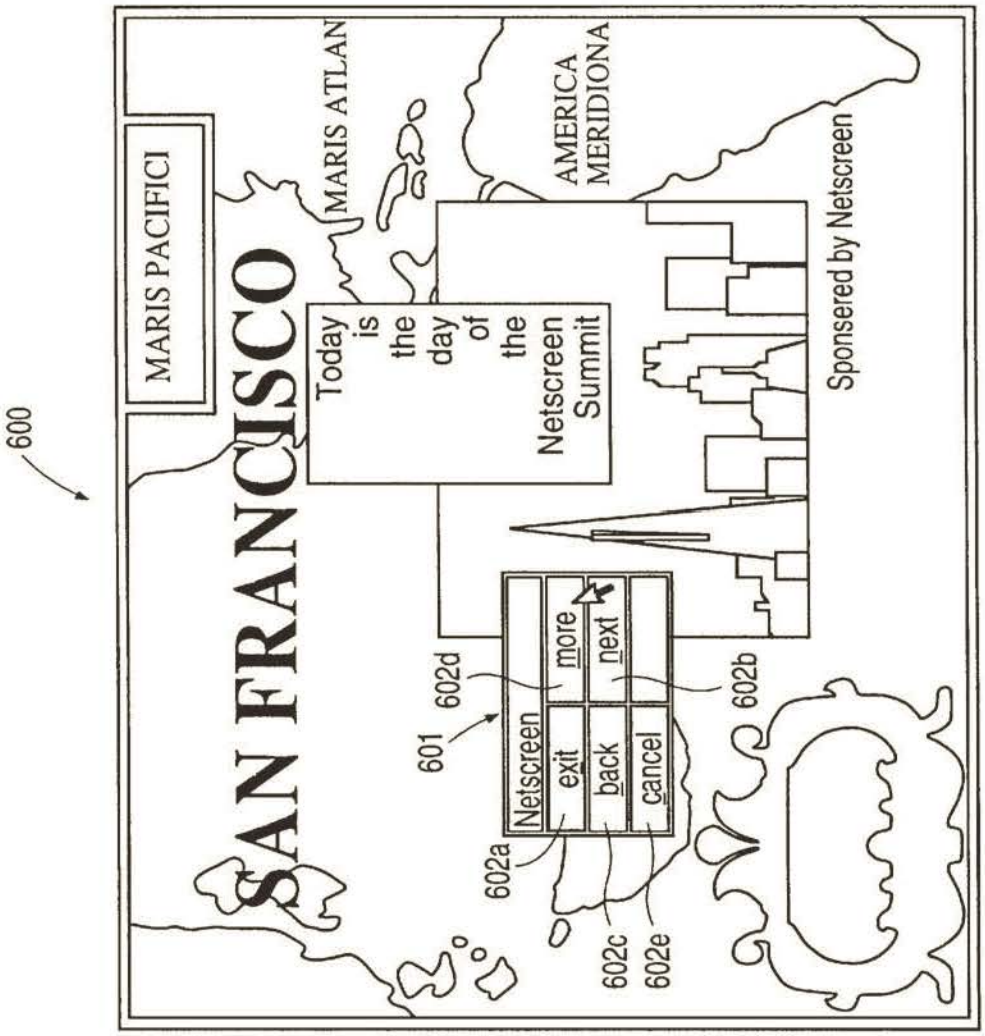

600
MARIS PACIFICI
SAN FRANCISCO
MARIS ATLAN
AMERICA MERIDIONA
Today is the day of the Netscreen Summit
Sponsored by Netscreen
601
602d
602b
602a
602c
602e
Netscreen
exit
back
cancel
more
next

FIG. 6

ATTENTION MANAGER FOR OCCUPYING THE PERIPHERAL ATTENTION OF A PERSON IN THE VICINITY OF A DISPLAY DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the engagement of the peripheral attention of a person in the vicinity of a display device such as the display monitor of a computer.

2. Related Art

Information providers of all sorts have an interest in presenting their information to information consumers and, in particular, to information consumers who may, or do, have an interest in the particular information provided by the particular information provider. At the same time, information consumers have an interest in accessing a wide variety of information and, in particular, information in which the information consumer may, or does, have an interest. Given the extent to which computers now permeate society, and particularly in view of the escalation of networking of those computers in various ways, there is increasing recognition of the capability of using computers, and, in particular, computers (and other devices) that are interconnected in a network, as an information dissemination tool that can satisfy the interests of both information providers and information consumers.

For example, information providers have used public computer networks (e.g., the Internet) and private computer networks (e.g., commercial online services such as America Online, Prodigy and CompuServe) to disseminate their information. This information can be displayed to a computer user having access to the network directly in response to a request from the user or indirectly (i.e., without request by the user) as a result of another action taken by the user. While these methods of information dissemination and acquisition can be effective, they do not exhaust the possibilities.

In a different vein, historically, computers have frequently included screen saving mechanisms ("screen savers") intended to prevent the phosphors of a computer display screen from burning out when the same image remains on the screen for a long period of time, such as might occur during a long period of inactivity while the computer is operating. As computer display screen technology has progressed, the use of screen savers to preserve the display screen has become increasingly unnecessary. However, the use of screen savers has continued—even proliferated—likely due to the aesthetic or entertainment value provided by the imagery of many screen savers. Further, the use of "wallpaper" (i.e., a pattern generated in the background portions on a computer display screen) in computer display screens has also arisen, largely one would suspect because of the aesthetic or entertainment value of the wallpaper imagery. While the use of screen savers and wallpaper with computer displays appeals to many users because of the imagery they present to the user, screen savers and wallpaper have not heretofore been used as a means to convey information from information providers to computer users. Further, screen savers and wallpaper have previously been implemented as relatively simple, self-contained computer application programs that are not typically integrated with other application programs or other aspects of computer operation. In particular, screen saver and wallpaper application programs have not been constructed to enable retrieval of display content from a remote location via a computer network.

SUMMARY OF THE INVENTION

An attention manager according to the invention presents information to a person in the vicinity of a display device in a manner that engages the peripheral attention of the person. Often, the display device is part of a broader apparatus (e.g., the display device of a computer). Generally, the attention manager makes use of "unused capacity" of the display device. For example, the information can be presented to the person while the apparatus (e.g., computer) is operating, but during inactive periods (i.e., when a user is not engaged in an intensive interaction with the apparatus). Or, the information can be presented to the person during active periods (i.e., when a user is engaged in an intensive interaction with the apparatus), but in an unobtrusive manner that does not distract the user from the primary interaction with the apparatus (e.g., the information is presented in areas of a display screen that are not used by displayed information associated with the primary interaction with the apparatus).

The information is embodied as one or more sets of content data. The sets of content data represent sensory data; typically, the sensory data is either video or audio data. Each set of content data is formulated by a content provider and made available for use by an attention manager according to the invention. Each content providing system can provide more than one set of content data. The content providing systems provide user interface tools that enable a particular set of content data to be requested. Once one or more sets of content data has been acquired, a content display system integrates scheduling information for all sets of content data to produce a schedule according to which an image or images corresponding to the sets of content data are displayed on a display device associated with the content display system.

A set or sets of instructions for enabling a display device to selectively display an image or images generated from a set of content data are also made available for use by the content display systems. Typically, the instructions enable images generated from content data to be displayed automatically, without user intervention, in a predetermined manner, thereby enhancing the capability of the invention to occupy the user's peripheral attention. Further, the attention manager can be implemented so that the instructions are automatically acquired (or updated, if necessary) each time a user requests acquisition of a set of content data, thereby making acquisition of the instructions transparent to the user of the attention manager and thus increasing the ease of use for the user. The instructions can include application instructions, control instructions and content data acquisition instructions. The application instructions can include operating instructions for beginning, managing, and terminating operation of the attention manager on a content display system, content display system scheduling instructions for scheduling the display of content data on a content display system, and installation instructions for installing the operating instructions and content display system scheduling instructions on a content display system. The control instructions can include display instructions for enabling generation of images from the content data on a particular type of display device or from a particular type of content data, and content data scheduling instructions for enabling temporal control of the display of the images generated from a set or sets of content data. The content data acquisition instructions can include acquisition instructions for enabling the acquisition of a set of content data, content data update instructions for enabling update of a previously acquired set of content data, and user interface installation instructions

for enabling provision of a user interface that allows a person to request a set of content data from a content providing system. Each of the application, control and content data acquisition instructions could be acquired from a content provider, or any one or all of the sets of instructions could be acquired from an application manager that provides generic sets of instructions that can be tailored as necessary or desirable by a content provider. Additionally, audit instructions can be made available that enable monitoring of usage of the attention manager.

According to one aspect of the invention, an attention manager engages the peripheral attention of a person in the vicinity of a display device of an apparatus by acquiring one or more sets of content data from a content providing system and selectively displaying on the display device, in an unobtrusive manner that does not distract a user of the apparatus from a primary interaction with the apparatus, an image or images generated from the set of content data. According to a further aspect of the invention, the selective display of the image or images begins automatically after detection of an idle period of predetermined duration (the "screen saver embodiment"). This aspect can be implemented, for example, using the screen saver API (application program interface) that is part of many operating systems. According to another further aspect of the invention, the selective display of an image or images occurs while the user is engaged in a primary interaction with the apparatus, which primary interaction can result in the display of an image or images in addition to the image or images generated from the set of content data (the "wallpaper embodiment"). If multitasking is allowed by the apparatus (e.g., by the computer operating system) with which the attention manager is used, the attention manager can be implemented so that, when operation of the attention manager is terminated, the user is returned to the state of the primary interaction that existed when operation of the attention manager began. The attention manager can also be implemented so that, during operation of the attention manager, the user is presented with a number of options regarding further use of the attention manager. In particular, one of the options can allow additional information to be obtained that is related to the set of content data for which an image is being displayed. Where the attention manager is implemented as part of a network, this option can enable information to be obtained from a remote information source via the network. Another option that can be implemented allows a user to specify a satisfaction level for a set of content data from which an image or images is being displayed, thereby affecting the frequency with which that set of content data is used by the attention manager in the future.

According to another aspect of the invention, an attention manager that engages the peripheral attention of a person in the vicinity of a display device includes a content display system associated with the display device, a mechanism that can communicate with the content display system via a first communications mechanism to provide to the content display system a set of instructions for enabling the display device to selectively display content data, and a content providing system that can communicate with the content display device via a second communications mechanism to provide a set of content data to the content display system. The content display system uses the provided set of instructions to selectively display on the display device an image or images generated from the provided content data. The attention manager according to this aspect of the invention can further include an application management system that can communicate via a third communications mechanism to provide to either the content providing system or the content display system one or more sets of instructions for enabling a display device to selectively display an image or images generated from a set of content data. In the former case, the content providing system can, in turn, communicate with the content display system to provide the one or more sets of instructions. The attention manager according to this aspect of the invention can be implemented, for example, using existing computer networks of information sources, such as the Internet (in particular, the World Wide Web) or commercial online services, advantageously making use of pre-existing hardware and software for enabling communication over those networks. Typically, though not necessarily, an attention manager according to this aspect of the invention will include multiple content display systems and multiple content providing systems. The content providing systems will each be capable of providing one or more sets of content data, so that, overall, there will be multiple available sets of content data which can be of different types. There can also be multiple sets of instructions for enabling a display device to selectively display an image or images generated from a set of content data, which sets of instructions may be tailored to display images from particular types of content data or to display content data using a particular display device.

According to yet another aspect of the invention, a computer readable medium can be encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device during operation of an attention manager. The instructions of the computer program can include: i) acquisition instructions for enabling acquisition of a set of content data from a specified information source, ii) user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source, iii) content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data, and iv) display instructions for enabling display of the image or images generated from the set of content data. The computer readable medium can also further include content data update instructions for enabling acquisition of an updated set of content data from an information source that corresponds to a previously acquired set of content data, the content data up date instructions specifying where and when to obtain the updated set of content data. The content data scheduling instructions can specify, for example, the duration of time that the image or images generated from a set of content data can be displayed, an order in which the images generated from a plurality of sets of content data are displayed, a time or times at which the image or images generated from a set of content data can or cannot be displayed, and/or constraint on the number of times that the image or images generated from a set of content data can be displayed. The display instructions can be tailored to enable display of the image or images generated from a set of content data on a display device of a particular type, or display of an image or images generated from a set of content data of a particular type.

According to still another aspect of the invention, a computer readable medium can be encoded with one or more computer programs for enabling a content display system to selectively display on a display device, in an unobtrusive manner that does not distract a person from a primary interaction with an apparatus associated with the display device, an image generated from a set of content data. The instructions of the computer program can include:

i) operating instructions for beginning, managing and terminating the selective display of the image on the display device, ii) content display system scheduling instructions for scheduling the display of the image on the display device, and iii) installation instructions for installing the operating instructions and content display system scheduling instructions on a content display system. The computer readable medium can also further include audit instructions for monitoring usage of the content display system to selectively display an image generated from a set of content data.

The attention manager according to the invention is a new and useful mechanism for providing information to users of the attention manager. The attention manager provides information in which a user has expressed an interest and, importantly, information that the user might not otherwise expend adequate energy to obtain. The user can tailor the information provided by interacting with specific information sources to indicate interest in particular information provided by a specific information source while the user is perusing other information from that information source (as opposed to giving a general indication of interest in information on a particular subject or of a particular kind, from which indication information that matches the indicated interest is automatically provided from various information sources). The user can also choose information from a wide variety of information sources; in particular, when the attention manager is implemented using a network (e.g., the Internet), the user can acquire information from a wide variety of remote information sources. Additionally, the information is presented to the user in a manner that uses portions of the user's attention capacity that may otherwise be unused or filled with extraneous information.

The attention manager according to the invention also provides a new and useful information dissemination tool to content providers. The attention manager affords an opportunity to content providers to disseminate their information to users that are interested in receiving such information, enabling the content providers to provide better directed information dissemination. Moreover, the attention manager provides access to the previously unused attention capacity of those interested users. Additionally, the attention manager allows content providers to tailor particular aspects of the attention manager as desired by the content provider, such as the acquisition of updated sets of the content provider's content data (e.g., the frequency of such updates), the display scheduling and manner of display of the content provider's content data, and the user interface that enables users to specify acquisition of the content provider's content data.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a flow chart of a method that implements an attention manager according to an embodiment of the invention.

FIG. **2** is a block diagram of a system for implementing an attention manager according to an embodiment of the invention.

FIGS. **3**A, **3**B and **3**C are schematic diagrams illustrating the functional components of an application manager, a content providing system and a content display system, respectively, according to an embodiment of the invention.

FIG. **4** is a flow chart of a method, according to an embodiment of the invention, for acquiring and updating sets of content data.

FIGS. **5** to **5**C together are a flow chart of a method that implements an attention manager according to another embodiment of the invention.

FIG. **6** illustrates a computer display screen including a user interface, according to one embodiment of the invention, that can be used to enable a user to specify a control option.

DETAILED DESCRIPTION OF THE INVENTION

According to the invention, an attention manager presents information to a person in the vicinity of a display device (or devices) in a manner that engages at least the peripheral attention of the person. "Display device", as used herein, encompasses any device that presents sensory stimulus to the person and includes, for example, computer video display devices, televisions and audio speakers. Further, here, "in the vicinity of" means any location with respect to the display device from which the person can perceive the information being presented. For example, if the information is being presented in a visual form, then "in the vicinity of" means any location from which the person can see the information. Or, if the information is being presented in an aural form, then "in the vicinity of" means any location from which the person can hear the information.

Often, the display device is part of a broader apparatus that can be utilized by a user for a primary interaction that is unrelated to the attention manager. (However, the attention manager can also be used with a display device that is not part of a broader apparatus, the user engaging in a primary interaction with the display device.) For example, the display device can be part of a computer that can be used to implement any of a number of application programs (e.g., word processing programs, computer games, spreadsheets, etc.). The person whose attention is engaged by the attention manager can be the user or another person in the vicinity of the display device. In one embodiment of the invention, the information is presented by the attention manager while a primary interaction is ongoing, but during inactive periods (i.e., when the user is not engaged in an intensive interaction with the apparatus). In another embodiment of the invention, the information is presented by the attention manager during active periods (i.e., when the user is engaged in an intensive interaction with the apparatus), but in an unobtrusive manner that does not distract the user from the primary interaction (e.g., the information is presented in areas of a display screen that are not used by displayed information associated with the primary interaction). Generally, then, an attention manager according to the invention makes use of "unused capacity" of a display device, "unused capacity" being defined broadly to include, for example, the embodiments mentioned above, i.e., both temporal (e.g., the first-described embodiment above) and spatial (e.g., the second-described embodiment above) dimensions.

The information is embodied by one or more sets of content data. Each set of content data is formulated by a content provider and made available by a corresponding content providing system for use with the attention manager. Each content providing system can provide more than one set of content data. Moreover, each set of content data can include one or more "clips", each clip being a definable portion of the set of content data that is used to generate a particular "image." The term "image" is used broadly here to mean any sensory stimulus that is produced from the set of content data, including, for example, visual imagery (e.g., moving or still pictures, text, or numerical information) and audio imagery (i.e., sounds). The content providing systems can also provide user interface tools that allow a user of the attention manager to specify that they want to obtain a particular set of content data. Once obtained, one or more

images generated from the clips of one or more sets of content data are displayed by a content display system. The content display system integrates scheduling information associated with the sets of content data to produce a schedule according to which the images corresponding to the sets of content data are displayed for a particular user of the attention manager.

A set or sets of instructions for enabling a display device to selectively display images generated from one or more sets of content data are also made available to users of the attention manager. The instructions include application instructions, control instructions and content data acquisition instructions. Typically, the instructions enable images generated from content data to be displayed automatically, without user intervention, in a predetermined manner, thereby enhancing the capability of the attention manager to occupy the user's peripheral attention. Different sets of instructions can be formulated, such that only images generated from sets of content data that are compatible with a particular set of instructions can be displayed using that set of instructions. Typically, an application manager establishes a standard set or sets of instructions which content providers can tailor to fit their needs or desires.

As indicated above, the sets of content data represent sensory data, i.e., data that can be used to generate images as defined above. Typically, the sensory data is either video or audio data. The kinds of content data that can be used with the attention manager are virtually limitless. For example, video data that might be used as content data includes data that can be used to generate advertisements of interest to the user, moving and still video images which can be real-time or pre-recorded (e.g., nature scenes, pictures of family members, MTV music segments, or video from a camera monitoring a specified location, such as ski slopes or a traffic intersection, for conditions at that location), financial data (e.g., stock ticker information) or news summaries. Audio data that might be used as content data includes data that can be used to generate, for example, music or news programs (e.g., radio talk shows).

The attention manager according to the invention is useful both to users of the attention manager and to content providers. For users, the attention manager provides information to a user in which the user has expressed an interest. In particular, the attention manager provides information to a user that the user might not otherwise expend adequate energy to obtain. Additionally, the information is presented to the user in a manner that uses portions of the user's attention capacity that may otherwise be filled with extraneous information. Further, a variety of information can be displayed (i.e., images can be generated from more than one set of content data), so that the user does not have to choose particular information to the exclusion of all other information.

For content providers, the attention manager affords an opportunity to disseminate information to users that are interested in receiving such information, thus enabling the content providers to provide better directed information dissemination. Moreover, the attention manager provides access to the previously unused attention capacity of those interested users. Further, since information from more than one content provider can be displayed, content providers are more likely to have their information displayed, since their information is displayed in addition to, rather than instead of, the information of other content providers, thereby reducing the need to compete with other content providers for the attention of the user.

FIG. **1** is a flow chart of a method **100** that implements an attention manager according to an embodiment of the invention. The method **100** is performed by a content display system according to the invention. The content display system can be implemented, for example, using a digital computer that includes a display device and that is programmed to perform the functions of the method **100**, as described below. Below, the method **100** is described as implemented on such a digital computer, though the method **100** could be implemented on other apparatus.

As shown by block **101**, initially (i.e., before operation of the attention manager begins), a user is engaged in a primary user interaction, e.g., a primary user interaction with a computer. Though shown in FIG. **1**, the primary user interaction of block **101** does not form part of the method **100** according to the invention. "Primary user interaction" is to be construed broadly and, generally, includes any operation of the computer (or other apparatus with which the user is engaging in an interaction) other than operation that is part of the attention manager according to the invention. When the user is interacting with a computer, the primary user interaction includes any operation of the computer that occurs to enable or to support the performance of the function or functions that provide the basis for the user's use of the computer. For example, the primary user interaction can be the use of any of a variety of conventional application programs (e.g., word processing programs, spreadsheet programs, personal finance programs, game programs, drawing programs, online services and Web browsers, among others). The primary user interaction can also be, for example, simply the operation of a conventional computer operating system, such as the Windows (e.g., Windows 3.1, Windows NT or Windows 95) or DOS operating systems produced by Microsoft Corp. of Redmond, Wash. or the MacIntosh operating system produced by Apple Computer, Inc. of Cupertino, Calif., among others. While, typically, the display device produces a display as a result of the primary user interaction, this need not necessarily be the case.

The method **100** actually begins with the block **102**. In the step shown in the block **102** (referred to hereinafter as step **102**), a determination is made as to whether an "idle period" has occurred. Generally, as used herein, "idle period" refers to a period of time of specified duration during which a specified condition does not occur. However, typically, the specified condition is one having the characteristic that failure of the condition to occur is indicative of an extended lack of intensive (or focused) interaction with the computer by the user ("user inactivity"). For example, the specified condition could be the lack of an input from an input device of the computer, e.g., the absence of striking a key on a keyboard, clicking a mouse, pressing on a touch-sensitive area of a touchscreen or issuing a voice command. Alternatively, the attention manager could be implemented with an apparatus that can monitor the environment of the apparatus (e.g., with a video camera) and evaluate the environment to ascertain that an "idle condition" (e.g., the viewing direction of the user of the apparatus is turned away from the apparatus by a specified amount for a specified period of time) has occurred, such idle condition triggering operation of the attention manager.

Theoretically, any duration of time can be specified to define the idle period. However, practically, the duration of time necessary to constitute an idle period cannot be so short that the attention manager begins operating at times that inhibit the user's primary interaction with the computer or that distract or annoy the user. Further, the duration of time chosen, as indicated above, should be sufficiently long to indicate an extended lack of interaction with the computer, suggesting that the user is not engaged in an interaction with

the computer that the user would not want to have interrupted. However, the duration of time should not be so long that, for periods of user inactivity of a typical duration, the amount of time that the attention manager operates is undesirably short. In sum, choosing the duration of time that defines an idle period involves a balancing of the above considerations. Illustratively, the idle period can be defined as a period of between thirty seconds and two minutes during which the specified condition (e.g., user interaction with an input device) does not occur.

While detection of the idle period can be implemented in any suitable manner, one way in which such detection can be implemented is by monitoring an idle timer that is part of a screen saver API (application program interface) that is, in turn, part of an operating system used to operate the computer. Such screen saver APIs are commonly found in current operating systems such as the Windows or MacIntosh operating systems discussed above. The idle timer could be monitored and a signal that an idle period has occurred generated when the magnitude of the idle time as indicated by the idle timer reaches a predefined threshold.

Detection of an idle period as the basis for beginning operation of the attention manager is an indirect activation of the attention manager. In an alternative embodiment, step **102** of the method **100** is modified so that the attention manager is activated directly by the user. In other words, step **102** would consist of waiting for explicit direction from the user to begin operation of the attention manager. Such explicit direction could be enabled with an appropriate user interface, such as an on-screen icon or a menu selection, that is always present on the display screen of the display device as part of a standard interface that is provided by the operating system. Examples of such standard interfaces are the "Apple Menu" provided as part of the MacIntosh operating system, and the "Start Menu" or desktop icons provided as part of the Windows 95 operating system.

Returning to FIG. **1**, if, in step **102**, an idle period has not occurred, then the primary user interaction continues (block **101**). The method **100** continues executing the step **102** at predefined time intervals (typically very short time intervals), thereby continually and frequently checking for the occurrence of an idle period.

If, in step **102**, an idle period is detected, then, in the step shown in the block **103** (hereinafter referred to as step **103**), a determination is made as to whether there are any sets of content data available for use in generating a display. (Hereinafter, reference is sometimes made to "displaying content data" or "displaying a set of content data"; it is to be understood that this means displaying images generated using the content data or set of content data.) Herein, "content data" refers to data that is used by the attention manager to generate displays (e.g., video images or sounds, or related sequences of video images or sounds). A "set of content data" refers to a related set of such data that is used to generate a particular display. A "clip" refers to a definable portion of a set of content data that is used to generate a particular image; a set of content data can include one or more clips and, therefore, can be used to generate one or more images. The acquisition of content data by the content display system is described in more detail below. Here, it is sufficient to note that, over time, an attention manager can acquire any number of sets of content data that can be displayed by the content display system.

If, in step **103**, no sets of content data are available for display, then the primary user interaction continues (block **101**). The method **100** continues executing the steps **102** and **103** at predefined time intervals, continually checking for the occurrence of an idle period and the acquisition of at least one set of content data.

If, in step **103**, at least one set of content data is available for display, then, in the step shown in the block **104** (hereinafter referred to as step **104**), the available sets of content data are scheduled for display by the content display system. (Alternatively, in other embodiments of the invention, scheduling of the sets of content data can occur before the method **100** begins. Such scheduling might be implemented, for example, so that each time a new set of content data is received by the content display system, the schedule is revised to include the new set of content data.) Typically, when the content display system acquires a new (or updated) set of content data, scheduling information for that set of content data is also acquired. Taken together, the scheduling information for all of the sets of content data is used to determine a schedule for display of the sets of content data by the content display system. Generally, determining a display schedule involves specifying the order in which the sets of content data are to be displayed and the duration of time for which each set of content data is to be displayed. The determination of the display schedule can also accommodate (to the extent possible) any special scheduling parameters for particular sets of content data (e.g., restrictions specifying when a particular set of content data must be displayed or cannot be displayed), mediating any conflicts between the display requirements of particular sets of content data. Often, though not necessarily, once the order and duration of display are established, the sets of content data are repetitively displayed by cycling through the display schedule repeatedly until operation of the attention manager is terminated. However, even where such iteration through the display schedule occurs, the display schedule can also accommodate scheduling parameters that delete sets of content data from the display schedule during particular iterations, thereby, for example, controlling the frequency with which particular sets of content data are displayed. The display schedule can be stored in an appropriately structured database, as known by those skilled in the art, that is stored in a memory of the computer used to implement the content display system.

Any appropriate set of rules, that can, for example, be arranged in any appropriate hierarchical manner, can be used for establishing a display schedule and, in particular, mediating conflicts between conflicting scheduling parameters associated with different sets of content data. For example, one rule for mediating conflicts may give preference to displaying sets of content data so that the sets of content data are displayed inversely to the order in which they were obtained by the content display system. This rule might be further specified so that a set of content data that has never previously been displayed by the attention manager is displayed prior to display of a set of content data that has been previously displayed, even though an update of the previously displayed set of content data has been obtained at a later time than that at which the never displayed set of content data was obtained. Another rule for mediating conflicts might resolve a conflict between two sets of content data having scheduling parameters that specify display at the same sequential position in the display schedule by randomly selecting one of the sets of content data to be displayed first during each iteration through the display schedule. Still another rule for mediating conflicts might establish a hierarchy of kinds of content data, with sets of content data of kinds at the top of the hierarchy being given preference for display over those at the bottom. Yet another

rule or set of rules for mediating conflicts may involve performing some sort of analysis of the characteristics of the sets of content data that have been obtained by a particular content display system to ascertain preferences indicated thereby, and giving preference to sets of content data that are evaluated to be relatively more preferred. Scheduling rules of this kind would typically be part of the scheduling parameters provided independent of the content providers (i.e., in content display system scheduling instructions, as discussed elsewhere herein and, in particular, with respect to FIGS. **3**A through **3**C below).

Other scheduling rules, not directed to mediating conflicts between sets of content data, can also be used in determining a schedule. For example, any set of content data that has been initially obtained before a certain time and/or that has been last updated before a certain time (i.e., a set of content data that is "stale") can be automatically precluded from being inserted into the display schedule. This exclusion could further be restricted to apply only to certain sets of content data or content data of certain kinds. Similarly, the frequency with which a particular set of content data appears in a display schedule can be based upon how stale the set of content data is. Scheduling rules of this kind would typically be part of the scheduling parameters provided by a content provider for a set of content data (i.e., in tailored content data scheduling instructions, as discussed elsewhere herein and, in particular, with respect to FIGS. **3**A through **3**C below).

The particular scheduling rules used may be influenced by the characteristics of a particular embodiment of the attention manager, such as the available kinds of content data or the characteristics of the potential users of the attention manager. The particular scheduling rules used may also be influenced by the need or desire to simplify implementation of the scheduling rules.

Returning to FIG. **1**, once the sets of content data have been scheduled for display, then, in the step shown in the block **105** (hereinafter referred to as step **105**), a set of content data is displayed. The content display system is provided with one or more sets of display instructions to enable display of the set or sets of content data on the display device (as discussed elsewhere herein and, in particular, with respect to FIGS. **3**A through **3**C below).

After a set of content data has been displayed, then, in the step shown in the block **106** (hereinafter referred to as step **106**), a determination is made as to whether operation of the attention manager has been terminated. Generally, operation of the attention manager can be terminated either directly or indirectly. Indirect termination of operation of the attention manager can be effected by, for example, causing operation of the attention manager to terminate when the specified condition (the non-occurrence of which is used to signal an idle period) occurs. For example, the attention manager can be terminated if the user makes an input to the computer using an input device, e.g., strikes a key on a keyboard, clicks a mouse, presses on a touch-sensitive area of a touchscreen or issues a voice command. For indirect termination, it may be desirable to add a further step or steps to the method **100** that, upon an indication that indirect termination should occur (e.g., the occurrence of the specified condition), asks the user to confirm that termination of the attention manager is, in fact, desired, and, if so, terminates the attention manager upon appropriate specified user input. In contrast to indirect termination, direct termination of operation of the attention manager can be effected by, for example, causing operation of the attention manager to terminate when the user selects a control option that specifies such termination, as described in more detail below with respect to FIGS **5**A, **5**B and **6**.

If, in step **106**, operation of the attention manager has been terminated, then the primary user interaction begins again (block **101**). The method **100** then begins executing the step **102** again, checking for the occurrence of an idle period.

If, in step **106**, operation of the attention manager has not been terminated, then, in the step shown in the block **107** (hereinafter referred to as step **107**), a determination is made as to whether there is an additional set of content data to be displayed. Typically, in operation of an attention manager according to the invention, there will always be another set of content data to be displayed, since, as discussed above, the sets of content data in the display schedule are iteratively displayed until operation of the attention manager is terminated. However, this need not be the case. For example, a limit can be established on the number of times that each set of content data can be displayed, or on the total number of times that any set of content data is displayed.

If, in step **107**, there are no additional sets of content data to be displayed, then the primary user interaction begins again (block **101**). The method **100** then begins executing the step **102** again, checking for the occurrence of an idle period.

If, in step **107**, there are additional sets of content data to be displayed, then the method **100** returns to the step **105** and displays a set of content data in accordance with the previously determined display schedule. Steps **105**, **106** and **107** are continuously performed, resulting in the continuous display of sets of content data, until either the user terminates the attention manager (step **106**) or there are no more sets of content data to be displayed (step **107**).

In another embodiment of the invention, a step could be added to the method **100**, either in place of or in addition to the step **107**, or as part of the step **106**, that causes operation of the attention manager to terminate after the attention manager has been operating for a specified period of time.

Further, in another embodiment of the invention, an appropriate step or steps could be added to the method **100** so that, at a specified time, such as after each iteration through the display schedule, the method **100** returns to the step **104** and re-determines the display schedule.

As described above, when the method **100** ends, the primary user interaction (block **101**) begins again. Preferably, the primary user interaction begins again with the status existent at the time that the method **100** began. Thus, the primary user interaction must be held in abeyance while the method **100** is operating. This can be accomplished by implementing the method **100** (or any other embodiment of the attention manager) with a content display system that is implemented on a computer that operates with an operating system that allows "multi-tasking" (here used to mean either the suspension of one program while one or more other programs operate, or the execution of one program simultaneously with the execution of one or more other programs). The Windows and MacIntosh operating systems (mentioned above), among others, are operating systems having this characteristic. Where the attention manager is implemented using a screen saver API that is part of the operating system, such multitasking occurs automatically as a characteristic of the screen saver API, i.e., when operation of the attention manager ends, the user is returned to the status of the primary interaction existent at the time that the attention manager started operating. In multitasking operating systems that do not include a screen saver API, this feature of the invention can be implemented by use of an appropriately programmed device driver, as known by

those skilled in the art, that monitors user interaction, suspending and restarting the primary user interaction at the beginning and end of operation of the attention manager.

The method **100** (FIG. **1**) described above is an embodiment of the invention in which the attention manager presents information to a person (which can be the user or another person) in the vicinity of the display device during inactive periods when a user is not engaged in an intensive interaction with the computer (as indicated by the step **102** which checks for the occurrence of an "idle period" before beginning operation of the attention manager). As indicated above, in other embodiments of the invention, the attention manager presents information to the person during active periods, but in an unobtrusive manner. In such embodiments, video content data could be presented, for example, as "wallpaper" on the display screen of a video display monitor. Audio content data according to these embodiments could be presented in the same way as for the embodiments of the method **100** described above. For implementation of such embodiments of the invention, the step **102** of the method **100** could be modified to be a determination as to whether the attention manager has been activated (typically this would require direct activation by the user). Alternatively, step **102** could be eliminated altogether and the attention manager could be implemented to operate at any time that the computer is operating and sets of content data are available for display (step **103**). For these embodiments, it is, as above, necessary that the content display system be implemented on a computer operated by an operating system that allows multi-tasking as described above. In particular, simultaneous operation of programs must be allowed, since the attention manager operates while the primary user interaction is ongoing (note that the relationships between the block **101** and the method **100** shown in FIG. **1** are not present in these embodiments of the invention).

Though not confined to such use, the attention manager according to the invention is envisioned as having particular use as a system implemented on, and used by, a network of computers. In such an implementation, each content providing system is implemented on a content provider computer. (It is possible to have more than one content providing system on a content provider computer.) Content display systems are implemented on user computers. The content provider computers and user computers are integrated together into a network such that each user computer can communicate with one or more of the content provider computers. The content provider computers need not (and typically would not) communicate with each other. Likewise, the user computers need not (and typically would not) communicate with each other. Further, each user computer need not communicate with all, or even more than one, of the content provider computers. For example, an attention manager according to the invention could be implemented so as to make use of a network such as the Internet. In particular, the graphical attributes of the World Wide Web would be particularly useful in enabling the provision of user interfaces that allow users to access the attention manager while visiting network sites of content providing systems.

FIG. **2** is a block diagram of a system **200** for implementing an attention manager according to an embodiment of the invention. The system **200** includes an application manager **201**, a multiplicity of content providing systems, shown as Content Providers 1 through n (content providing systems **202***a*, **202***b* and **202***c* are illustrated in FIG. **2**), and a multiplicity of content display systems, shown as Users 1 through n (content display systems **203***a*, **203***b* and **203***c* are illustrated in FIG. **2**). Hereinafter, the content providing systems and content display systems are referred to generally using the numerals **202** and **203**, respectively. In FIG. **2**, the solid lines indicate that communication must occur in the system **200** and the dashed lines indicate that communication may occur. However, note that, in another embodiment of the invention, the application manager **201** is not present, and communication between any particular content display system and particular content providing system need not necessarily occur.

The application manager **201**, content providing systems **202** and content display systems **203** can be implemented using appropriately programmed digital computers. Generally, the computers can be any conventional digital computers including an input device (such as a keyboard, mouse or touch screen), an output device (such as a conventional computer display monitor and/or one or more audio speakers), a processing device (such as a conventional microprocessor), a memory (such as a hard disk and/or random access memory), additional conventional devices necessary to interconnect and enable communication between the above-listed devices, and communications devices (e.g., a modem) for enabling communication with other computers of the system. For example, the application manager **201** and content providing systems **202** can be implemented using conventional server computers, while the content display systems **203** can be implemented using conventional client computers. The application manager **201**, content providing system **202** and content display systems **203** could also themselves each be implemented by a client-server network of computers. Communication between the computers can be accomplished using any appropriate communication transmission lines, such as conventional telephone lines, or high speed data transmission systems such as T1, T3 or ISDN. The communication can be managed using any appropriate conventional networking methods (e.g., computer programs and protocols) and apparatus, as known by those skilled in the art. In particular, as described further below, the computers are programmed to enable the content display systems **203** to communicate with the content providing systems **202** and application manager **201** even without direct action by the user. In addition to being programmed to enable networking, each of the computers is also appropriately programmed, as described above and below, to perform the functions of the application manager **201**, content providing systems **202** and content display systems **203**, as appropriate.

FIGS. **3**A, **3**B and **3**C are schematic diagrams illustrating the functional components of the application manager **201**, a content providing system **202** and a content display system **203**, respectively, according to an embodiment of the invention. Each of the functional components are represented by a set of instructions and/or data. (In particular, each of the sets of instructions may include, if appropriate, data related to accomplishment of the functions associated with the set of instructions; similarly, a set of content data may include, if appropriate, instructions that enable generation of an image from the set of content data.) Each of these sets of instructions and/or data can be embodied in an appropriate computer program or set of computer instructions (the latter capable of including computer instructions and data), or an appropriate set of data configured for use by a set or sets of instructions (e.g., computer program) that must interact with the set of data in order to implement the attention manager.

The application manager **201** stores a variety of instructions for use in implementing the attention manager. As

shown in FIG. 3A, generally, the application manager **201** stores application instructions **310**, control instructions **320**, and content data acquisition instructions **330** that can be disseminated to the content display systems **203** and content providing systems **202** as necessary or appropriate. The application manager **201** can also store audit instructions **340** that can be used to enable monitoring of usage of the attention manager.

The application instructions **310** include operating instructions **311** for beginning, managing and terminating operation of the attention manager on a content display system **203**, and content display system scheduling instructions **312** for scheduling the display of content data on a content display system **203**. The method **100** (FIG. **1**) described above is one embodiment of such application instructions **310**. The application instructions **310** also include installation instructions **313** that enable the other instructions used by the attention manager to be implemented using the hardware that is part of and associated with a particular content display system **203**. The installation instructions **313** can be implemented as known by those skilled in the art. For example, the installation instructions **313** can be a "plug-in" or "helper" application program (such as a helper application that can be used with the Navigator and Mosaic software programs made by Netscape Communications Corp. of Mountain View, Calif.) that is used to process instructions or data of a particular type—in this case, instructions to implement the attention manager, and content data for use with the attention manager, that can be installed on the hardware of a particular content display system **203**. There can be a multiplicity of such helper applications, each capable of operating on particular hardware that could be used to implement a content display system **203**. The helper application enables the software program (i.e., Navigator or Mosaic) being used to access the sites of content providers to process references (e.g., Universal Resource Locators, or "URLs") to the particular type of instructions and/or data, so that sets of content data (including updated sets of content data) and the application instructions **310**, control instructions **320** and content data acquisition instructions **330** (including updated versions of those instructions) can be acquired.

The control instructions **320** include display instructions **321** and content data scheduling instructions **322**, as described in more detail below, that are typically enhanced by content providers in a particular manner that is appropriate for the content data that the content providers provide. The application manager **201** can (and typically does) store and disseminate multiple distinct sets of control instructions **320**. Generally, the display instructions **321** of a particular set of control instructions **320** enable display of content data on a particular type of display device (e.g., a particular type of computer video display or a particular type of audio speaker) or display of a particular type of content data. Display instructions **321** that can be used with a particular display device are typically already developed by third parties (e.g., the maker of the display device) and are readily available. Tailoring of the display instructions **321** to display particular types of content data (such as instructions for displaying content data that is in the GIF format or the format of AutoDesk Animator FLC files) can be done by either the application manager **201** or a content provider. The content data scheduling instructions **322** provide temporal constraints on the display of particular sets of content data. As stored by the application manager **201**, the content data scheduling instructions **322** are usually the same for each set of control instructions **320** and provide a generic set of scheduling instructions that can be tailored by a content provider.

The content data acquisition instructions **330** include acquisition instructions **331** for enabling the initial acquisition of a set of content data and instructions for implementing the attention manager, and content data update instructions **332** for enabling update of previously obtained sets of content data and attention manager instructions. The acquisition instructions **331** and content data update instructions **332** are generic sets of instructions that can be tailored by a content provider. The content data acquisition instructions **330** can also include user interface installation instructions **333** that enable content providers to install a user interface in the information environment (e.g., Web page) of the content provider so that users can request sets of content data from the content provider. Such user interface installation instructions are conventional and readily available for use with the attention manager of the invention.

As shown in FIG. 3B, the content providing systems **202** store one or more sets of content data **350** that can be disseminated to content display systems **203** as requested. The content providing systems **202** can also store the application instructions **310**, control instructions **320**, and content data acquisition instructions **330** described above.

As indicated above, each set of content data **350** defines a related group of data that is used to generate a particular display and includes one or more clips that each represent a definable portion of the set of content data that is used to generate a particular image. The content data **350** represents sensory data and can be, for example, video or audio data. A particular set of content data **350** can be formulated in different versions that are each compatible with content display systems **203** having particular characteristics. In particular, the characteristics of the display device of a content display system **203** can affect the formulation of a set of content data **350**. For example, for computer video display monitors, the formulation of a version of a set of content data **350** can depend on the size of the display screen (e.g., horizontal length by vertical length), the display resolution (e.g., the number of horizontal pixels by the number of vertical pixels), the color depth (number, e.g., 256, of possible colors) and the characteristics of the display drivers for the display device. The formulation of a version of a set of content data **350** could also depend upon the operating system being used by the computer on which the content display system **203** is implemented or other characteristics of the computer, such as the speed with which the display device can be operated (insofar as that speed is affected by the characteristics of the computer such as processor speed). Generally, a set of content data **350** can be formatted as known by those skilled in the art in view of the above considerations.

As indicated above, the control instructions **320** (as well as the content data acquisition instructions **330**) are typically enhanced by content providers as appropriate for particular content data. The manner in which these instructions can be tailored by content providers is desirably required to conform to a specified format. Below, a description is given of package files that can be used for tailoring the control instructions **320** and content data acquisition instructions **330**, as well identifying the location of content data. These package files can be created using an appropriate computer program (package file editor) that can be provided by, for example, the application manager **201** and that enables this tailoring to be accomplished easily and according to the specified format.

The content provider can tailor the content data scheduling instructions **322** to indicate the duration of time that a particular set of content data can be displayed ("duration

instructions"). Generally, the duration instructions can be arbitrarily complex and can vary in accordance with a variety of factors, including, for example, the particular time at which the set of content data **350** is displayed after the attention manager begins operating, or the number of previous times that the set of content data **350** has been displayed during a continuous operation of the attention manager. The content provider can also tailor the content data scheduling instructions **322** to indicate an order in which the clips of a set of content data **350** are displayed, as well as the duration of the display for each clip ("sequencing instructions"). The content provider can also tailor the content data scheduling instructions **322** to indicate particular times or ranges of times at which a set of content data **350** can or cannot be displayed ("timing instructions") These times can be absolute (e.g., a particular clock time on a particular day, a particular day or days during a week, after or before a specified date) or relative (e.g., not before or after a specified duration of time since the attention manager began operation, first or not first among the sets of content data **350** to be displayed, not after a particular kind or set of content data **350**). The content provider can also tailor the content data scheduling instructions **322** to specify a maximum number of times that the set of content data **350** can be displayed after the attention manager begins operating or a maximum number of times that the set of content data **350** can be displayed over any number of operations of the attention manager ("saturation instructions").

The content provider can also tailor the display instructions **321** to display a particular set or sets of content data. The display instructions **321** can be tailored, for example, according to the type or types of the content data. The type of content data indicates the manner in which an image or images are generated from the content data (i.e., how the bit patterns in a particular clip are transformed into an image). The type of content data is typically established as a consequence of the manner (e.g., with a particular software application program such as the Photoshop or Premiere programs produced by Adobe Systems of Mountain View, Calif.) in which a particular clip is created. The installation instructions **313**, discussed above, enable content data of different types to be obtained by the attention manager. Generally, the possible types of content data can be confined to an enumerated set of standard data types, such as the Mime data types used with the World Wide Web. As will be more readily understood from the description below, the type of content data can be specified, for example, in a field of the clip part of a package file.

The ability to tailor sets of content data **350** and associated control instructions **320** for particular content display systems **203**, before the sets of content data **350** and control instructions **320** are provided to those content display systems **203**, is advantageous because it allows the tailoring to be done once, by the content providing system **202** or the application manager **201**, rather than multiple times, once by each content display system **203** that uses the set of content data **350** and associated control instructions **320**.

The content data acquisition instructions **330**—in particular, the content data update instructions **332**—are also tailored by content providers as appropriate for particular sets of content data **350**. In particular, the content provider can tailor the content data acquisition instructions **330** to indicate where and when to obtain an updated set of content data **350**. For example, the indication of where to obtain an updated set of content data **350** can be accomplished by specifying an appropriate network address of a content providing system **202**. The network addresses can be specified by, for example, a URL used to identify, for example, an HTML file, an applet (a short application program written in Java or other suitable programming language), a script based on CGI or other suitable mechanism, or any other resource (i.e., computer program or set of data). The indication of when to obtain an updated set of content data **350** can be accomplished by specifying a time or times, either absolute time or times (i.e., particular dates and times during the day) or relative time or times (e.g., one month after the last acquisition/update of the set of content data **350**). For example, the update schedule could be established to obtain updates every hour, every day or every week. Or, the update schedule could be established to obtain updates upon the occurrence of a particular event, such as a specified percentage increase or decrease in a stock market index. In general, the particular update schedule used will depend upon the character of the content data with which the update schedule is associated, e.g., content data representing stock prices would probably be updated more frequently than content data representing an advertisement.

As shown in FIG. **3**C, the content display systems **203** store the application instructions **310**, control instructions **320**, and content data acquisition instructions **330** described above. The application instructions **310** use the control instructions **320** to display sets of content data **350** that are obtained (and updated, if appropriate) by the content data acquisition instructions **330**. The application instructions **310** and control instructions **320** are discussed generally, and with respect to particular embodiments, in more detail above, while an embodiment of the content data acquisition instructions **330** is described below.

FIG. **4** is a flow chart of a method **400** according to the invention for acquiring and updating sets of content data, i.e., the method **400** is an embodiment, at least in part, of the acquisition instructions **331** and content data update instructions **332** of the content data acquisition instructions **330** discussed above with respect to FIGS. **3**A through **3**C. In the method **400**, the steps shown by blocks **402** through **407** can be implemented in the acquisition instructions **331** and the steps shown by blocks **403** through **410** can be implemented in the content data update instructions **332**. Generally, the steps of the method **400** can be implemented on an appropriately programmed digital computer that is programmed to perform the functions of the method **400**, as described below. Below, the method **400** is described as implemented on such a digital computer, though the method **400** is not limited to such an implementation. The method **400** necessitates communication between a content display system **203** and one or more content providing systems **202**. As will be understood by those skilled in the art of digital computer programming for computer network communications, when the method **400** is implemented using a programmed digital computer, particular steps of the method **400** could be implemented on either a content display system **203** or a content providing system **202**.

In the step shown in the block **401** (referred to hereinafter as step **401**), a set of content data is selected for display by the attention manager. Initially, in step **401**, particular sets of content data are obtained as a result of direct request by the user. Any appropriate user interface can be used for enabling a user to directly request a particular set of content data. For example, Web pages on the World Wide Web could include graphical buttons for enabling users that visit the Web page to request particular sets of content data. Selection of a button on a Web page results in an indication to the appropriate content providing system **202** that the requesting content display system **203** has requested the set of content

data corresponding to the selected button to be transferred to the content display system **203**. The user interface instructions **333** discussed above, that can be provided to each content providing system **202**, can be used to create the user interface.

Selection of a set of content data in step **401** causes a set of acquisition instructions **331** to be transferred to the content display system **203**. The acquisition instructions **331** include information identifying the site from which the set of content data can be obtained, as well as the site or sites from which instructions (e.g., application instructions **310**, control instructions **320**, content data acquisition instructions **330** and audit instructions **340**) for implementing the attention manager can be obtained. These sites can be the same or different sites. The sites can be identified by, for example, using URLs, as described above. The acquisition instructions **331** can also include instructions for establishing an appropriate user interface (e.g., a desktop icon) in the content display system **203** that enables a user to cause the installation instructions **313** to be executed, thereby installing the attention manager in the content display system **203**.

In the step shown in the block **402** (referred to hereinafter as step **402**), a determination is made as to whether the requesting content display system **203** has the application instructions **310** (FIGS. **3**A through **3**C) that enable operation of the attention manager and scheduling of sets of content data **350**. If the content display system **203** does not have the application instructions **310**, then, in the step shown in the block **405** (referred to hereinafter as step **405**), the content display system **203** uses the appropriate site identification provided by the content providing system **202** to obtain a version of the application instructions **310** (typically the most current version of the application instructions **310** that is compatible with the set of content data **350** requested by the user). The application instructions **310** can be provided by the content providing system **202** from which the set of content data **350** is being obtained. Alternatively, the application instructions **310** can be provided directly to the content display system **203** by the application manager **201** (or from some site other than a content provider or the application manager **201**) by causing an appropriate instruction to be issued to the application manager **201** (or other site) by either the content providing system **202** or the content display system **203**.

If the content display system **203** does have the application instructions **310** (step **402**), then, in the step shown in the block **403** (referred to hereinafter as step **403**), a determination is made as to which version or versions of the application instructions **310** the content display system **203** has. As indicated elsewhere, a particular set of content data **350** can (and typically will) be updated from time to time, thereby creating different versions of the set of content data **350**. Likewise, the application instructions **310** can also be updated, thereby creating different versions of the application instructions **310**. In general, a set of content data **350** can be updated without regard to whether the set of content data is compatible with all versions of the application instructions **310** (though the set of content data **350** must be compatible with at least one version of the application instructions **310**). Likewise, the application instructions **310** can be updated without regard to whether any particular set of content data **350** is compatible with that version of the application instructions **310**. Moreover, particular versions of the application instructions **310** may be compatible only with sets of content data **350** of certain types. Consequently, a particular content display system **203**, even though the content display system **203** has the application instructions **310**, may not have a version of the application instructions **310** that is compatible with the type and/or version of the set of content data **350** being requested.

It is necessary, therefore, to determine whether the content display system **203** has a version of the application instructions **310** that is compatible with the type and version of the set of content data **350** being requested so that, if necessary, a compatible set of application instructions **310** can be provided to the content display system **203**. In the step shown in the block **404** (referred to hereinafter as step **404**), this determination is made. If the content display system **203** does not have a compatible version of the application instructions **310**, then, in step **405**, the content providing system **202** (or, for example, the application manager **201**) provides to the content display system **203** a version of the application instructions **310** (typically the most current version) that is compatible with the requested set of content data **350**.

Alternatively, in step **404**, a determination could be made as to whether the version of the application instructions **310** that the content display system **203** has is the most current version of a set of compatible application instructions **310**. If the version is not the current version, then the content providing system **202** provides the current version (step **405**), even if the version that the content display system **202** already had is compatible with the newly acquired set of content data **350**.

Preferably, updated sets of application instructions **310** are made downwardly compatible with previous sets of application instructions **310**, so that the updated application instructions **310** can be used with any previously obtained sets of content data that are compatible with a previous set of application instructions **310**. If downward compatibility is not maintained, the updated set of application instructions **310** can replace a previous set of application instructions **310** and incompatible sets of content data can be removed from the schedule of sets of content data to be displayed (this can be accomplished by the use of appropriate instructions in the content display system scheduling instructions **312** that check for the compatibility of sets of content data with the existing set of application instructions **310**) when the attention manager is operating. The content data update instructions **332** can also include instructions that ascertain the current version of the application instructions **310** and, for each set of content data **350** that is incompatible with the current version of the application instructions **310**, seek to obtain, at the time scheduled for an update, an updated set of content data **350** that is compatible with the current version of the application instructions **310**.

The steps **402** through **405** are advantageous in that they result in the provision of application instructions **310** to a content display system **203** only when such instructions are needed, thus minimizing the number of sets of application instructions that are made available. The steps **402** through **405** also minimize the amount of information that must be transmitted over communication lines to the content display system **203**, thereby freeing those lines for other communication and minimizing the cost (i.e., cost of using the communication lines) associated with using the attention manager of the invention.

Returning to FIG. **4**, in the step shown in the block **406** (referred to hereinafter as step **406**), the content providing system **202** provides the current set of content data **350** to the content display system **203**. (In practice, the set of content data **350** can be provided before, after or simultaneously with provision of the application instructions **310**.)

Further, as described above, a particular set of content data **350** can exist in different versions that are each compatible with the content display system **203** to which the version of the set of content data **350** is being provided. The step **406** can include a determination as to the version or versions of the set of content data **350** that can be used by the requesting content display system **203**, so that a properly formulated set of content data **350** is acquired.

A set of control instructions **320** and content data acquisition instructions **330** (FIGS. **3**A through **3**C) associated with the set of content data **350** can also be provided, as shown by the step of block **407** (referred to hereinafter as step **407**). Typically, a check is made (like that for the application instructions **310** and providing similar benefits) to determine whether the content display system **203** already has a compatible (and/or current) version of the control instructions **320** and/or the content data acquisition instructions **330** associated with the set of content data **350** being obtained.

Each set of content obtained by a content display system **203** can be stored in a database (having any suitable structure) that is stored in a memory of the computer used to implement the content display system **203**. The database can also store other information associated with each set of content data **350**. This information is discussed in more detail below in the discussion of package files which can be used to convey such information from the content providing systems **202** to the content display systems **203**. The package file editor mentioned above can be provided to each content providing system **202** to enable the content provider to easily create a package file for each set of content data **350** provided by that content provider.

Each package file includes a reference to the set of content data **350** (e.g., a network address) to which that package file corresponds. As mentioned above, each package file can also include a variety of other information. For example, the package file can include a specification of the format of the content data **350** (i.e., an indication of the types of content display systems **203** with which the set of content data **350** is compatible) and the type of the content data (e.g., an identification of a particular graphical format, as discussed above). (This information might be specified explicitly or implicitly; alternatively, this information may be passed to the content display system **203** separately from the package file.) The package file can additionally include a text description of the contents of the package file (this could be used, for example, in a user interface that lists descriptions of all of the sets of content data available to a content display system **203** or provided by a content providing system **202**). The package file can also include information governing the presentation of the set of content data, such as screen position, special animation effects and display duration (the latter is shown by the View-Time attribute in the Example below). The update information (location and schedule) is also included in the package file. The package file can also include linking information (e.g., network address of an information source) used to implement a link option discussed in more detail below. The content data scheduling information discussed above can also be included in the package file. The package file can also include data structures that can be used to store auditing information, as discussed in more detail below. The package file can also include reference to one or more sets of control instructions **320**, each set of control instructions **320** enabling display of the set of content data **350** by a content display system **203** having a particular architecture, or enabling display of clips of particular types.

The following Example illustrates how a package file for use with the invention could be constructed. The package file of this Example does not include all types of information that could be included in a package file; it is to be understood that other types of information (as discussed above, for example) could be included in such a package file, expressed in a similar manner to that shown in the Example. In this illustration, the package file is constructed in an object-oriented manner. Generally, each statement in the package file conforms to the following syntax:

keyword{attribute:value (1) . . . attribute:value(n)}

where "keyword" can be either PACKAGE or CLIP, "attribute" identifies one of the types of information discussed immediately above, and "value" is an identification of particular content for the type of information. There can be any number of "attribute:value" pairs in a statement. In the Example, each attribute:value pair is designated at right by a numeral enclosed in parentheses to aid in the description; this numeral does not form part of the package file shown in the Example.

Example

```
PACKAGE {   Object-Id: 1                                              (1)
            Object-Type: 1                                            (2)
            Source: http://iwww.interval.com/~freiberg/               (3)
              Netscreen/Bookreviews/reviews.nss
            Name: Book Reviews: Day 1                                 (4)
            Description:                                              (5)
            Update Frequency: 720                                     (6)
}
CLIP {      Object-Id: 16919316                                       (7)
            Object-Type: 2                                            (8)
            Source: http://iwww.interval.com/~freiberg/               (9)
              Netscreen/Bookreviews/1%20Day%20Book/
              bookreview-1-a1.gif
            Name: Anger                                               (10)
            Description: Book Review                                  (11)
            Update-Frequency: 0                                       (12)
            View-Time: 15                                             (13)
            Followup-URL: http://www.randomhouse.com/                 (14)
              knopf/
            Linked-To-Following: 1                                    (15)
}
CLIP {      Object-Id: 16919384                                       (16)
            Object-Type: 2                                            (17)
            Source: http://iwww.interva1.com/~freiberg/               (18)
              Netscreen/Bookreviews/1%20Day%20Book/
              bookreview-1-a2.gif
            Name: Emotional Intelligence                              (19)
            Description:                                              (20)
            Update-Frequency: 0                                       (21)
            View-Time: 15                                             (22)
            Followup-URL: http://www.randomhouse.com/                 (23)
              knopf/
            Linked-To-Following: 0                                    (24)
}
```

The first part of line **1** indicates that the following describes a package file. The remainder of line **1** and line **2** are used in debugging and are not relevant to the invention. Line **3** specifies a network address that identifies the location of the package file. (Note that the type of the package file is suggested in line **3** by the file extension .nss, though this extension is not necessary to specify the type. This extension can be used to implicitly specify the type of the package file to the content display system **203**.) Lines **4** and **5** each give a description of the contents of the package file that can be used, for example, in a user interface to identify the package file. Line **6** specifies the frequency of acquisition of updates to the set of content data **350** and related instructions that are described by the package file. (In this Example, the frequency is specified in minutes.) The first part of line **7**

indicates that the following describes a clip in the package file. The remainder of line **7** and line **8** are similar to lines **1** and **2**. Line **9** specifies a network address that identifies the location of the clip. (Similarly to line **3**, the type of the clip is suggested in line **9** by the file extension .gif, though, again, this extension is not necessary to specify the type.) Lines **10**, **11** and **12** are similar to lines **4**, **5** and **6**. (Note that, in line **12**, the specification of "0" for the update frequency indicates that the clip is never updated.) Line **13** specifies the duration of display for this clip. (In this Example, the duration is specified in seconds.) Line **14** specifies a network address of an information source to which a link can be established during display of this clip. (This aspect of the invention is described in more detail below with respect to the "more" option **602***d* of FIG. **6**.) Line **15** specifies the number of additional clips that are part of this package file. Lines **16** through **24** are similar to lines **7** through **15**.

When a content display system **203** receives a new package file from a content providing system **202**, the content display system **203** first determines whether the contents of a corresponding package file (i.e., either the same package file or an earlier version of the package file) already exist as part of the database. This can be done by scanning a list of entries in the database that each indicate the presence of the contents of a particular package file. If the contents of a corresponding package file are not present, then a new entry is created in the list and the contents of the new package file are stored as part of the database (in accordance with the structure of the database). As part of the process of storing the contents of the package file, the contents are transformed into a form that is compatible with the architecture of the content display system **203** (this is enabled by the installation instructions **313** discussed above.

As described above, the database of content data and related information is constructed from a package file that can have a particular format, as illustrated in the Example above. However, generally, such a database can be constructed from files having any format (e.g., an ASCII file) that enables specification of the information described above that a package file includes.

Returning to FIG. **4**, as indicated above, when a set of content data **350** is obtained (step **406**), corresponding control instructions **320** and content data acquisition instructions **330** are also obtained (step **407**) if such instructions have not already been acquired by the content display system **203**. In particular, content data update instructions **332** can be obtained, so that updates to the set of content data **350** and/or the associated control instructions **320** and content data acquisition instructions **330** can be obtained in the future. As mentioned above, the content data update instructions **332** include a description of the location of the content providing system **202** from which the updates can be obtained as well a schedule of times at which such updates should be obtained.

In the step shown in the block **408** (referred to hereinafter as step **408**), a determination is made as to whether it is time to update the set of content data **350**. The update schedule discussed above is used for this purpose. As long as the schedule indicates that no update need be obtained, the method **400** continues executing the step **408**, thereby continuously monitoring whether an update need be obtained. The monitoring of step **408** could be implemented, for example, by a procedure that monitors the content display system computer clock and indicates that an update should be obtained when the clock time is equal to a time in the update schedule.

The update schedule can be established according to any desired criteria. For example, preferably, though not necessarily, the step **408** (and the steps **409** and **410** discussed below and, as necessary, the steps **403** through **407** discussed above) of the method **400** operates at any time that the computer (or computers) with which the content display system **203** is implemented is on, even when the attention manager is not operating. Thus, the update schedule could be established so that updates are obtained during the middle of the night, when charges for communication with content providing systems **202** are cheaper. Preferably, then, at least this part of the content display system **203** is implemented on a computer that is always on, so that such cheap communications time can be utilized for obtaining updates. This can be particularly feasible if the content display system **203** is implemented on a client-server network in which at least the content data update instructions **332** are executed by a server computer which remains on at all times. If, however, the computer on which the content data update instructions **332** are executed is turned off at a time when an update is scheduled to be retrieved, then the update can occur immediately after the next time that the computer is turned on.

This aspect of the content data acquisition instructions **332** can be implemented, for example, using a communications daemon that is part of the content data update instructions **332**. When the content data update instructions **332** are acquired by a content display system **203**, the daemon is inserted into a startup file that is executed at the beginning of operation of the operating system of the computer with which the content display system **203** is associated. The daemon causes a connection to be made to each location from which the content data update instructions **332** indicate that an update is to be acquired. For example, if the computer uses a Windows operating system, the daemon initiates a WinSock TCP/IP connection to enable connection to be made to the locations of the updated sets of content data **350**.

Returning to FIG. **4**, once it is determined that an update of the set of content data **350** should be obtained, then, in the step shown in the block **409** (referred to hereinafter as step **409**), the location of the appropriate content providing system **202** is ascertained from the scheduling information, and that location is accessed.

In the step shown in the block **410** (referred to hereinafter as step **410**), a determination is made as to whether an updated set of content data **350** is available on the content providing system **202**. If an updated set of content data **350** is not available, then the step **408** begins executing again, continuing until the update schedule indicates that it is again time to check for an updated set of content data **350**. If an updated set of content data **350** is available, then the method **400** returns to the step **403**, and an updated set of content data **350** and, if necessary, related control instructions **320** and content data acquisition instructions **330** are provided to the content display system **203** (i.e., an appropriate package file is provided to the content display system **203**). As discussed above, the content display system **203** compares the version of the package file contents stored in the database to the contents of the version of the package file being newly provided, and makes changes to the database as necessary.

FIGS. **5**A and **5**B together are a flow chart of a method **500** that implements an attention manager according to another embodiment of the invention. Like the method **100** (FIG. **1**), the method **500** is performed by a content display system **203** according to the invention which can be implemented, for example, using a digital computer that includes a display device and that is programmed to perform the functions of the method **500**, as described below. Below, the method **500** is described as implemented on such a

digital computer, though the method **500** could be implemented on other apparatus. Steps in the method **500** that are the same as steps in the method **100** are shown by like-numbered blocks. Generally, the method **500** differs from the method **100** in that the method **500** provides a number of control options that enable the user to effect particular types of control of the attention manager. While the method **500** and the associated description below illustrate several control options that can be used with an attention manager according to the invention, it is to be understood that an attention manager according to the invention could include any of a number of other options not shown in FIGS. **5**A and **5**B, or described specifically herein.

The attention manager according to this embodiment of the invention can include any suitable user interface to enable the user to specify a control option. FIG. **6** illustrates a computer display screen **600** including one embodiment of such a user interface. The screen **600** displays, in addition to an image generated from a set of content data **350**, a dialog box **601** that includes a list of available control options **602***a* through **602***e*. The dialog box **601** can remain on the screen **600** during the entire time that the attention manager is operating. The available control options **602***a* through **602***e* shown in the dialog box **601**—as well as additional control options that could be, but are not, included in the dialog box **601**—are discussed in more detail below.

The manner of selecting an option depends upon the available user input device(s). For example, a keyboard could be used to move a cursor to a desired option, which is then selected using the Enter key. Or, a mouse could be used to move a cursor to a desired option, then clicked to select the option. Or, a touch pen could be used to contact the screen **600** (if the screen **600** is a touch-sensitive screen) at an appropriate location to cause a desired option to be selected. Or, an audio command could be issued to a voice recognition system which causes the desired option to be selected.

One control option that can be used with an attention manager according to the invention enables the user to directly terminate operation of the attention manager. In FIG. **6**, this is shown as the "exit" option **602***a*. In the method **500**, this option is implemented using the step **107**. As discussed above, selection of the "exit" option **602***a* causes the primary user interaction to begin again (block **101**).

Another control option that can be used with an attention manager according to the invention enables the user to terminate display of the currently displayed set of content data and begin display of the next scheduled set of content data. In FIG. **6**, this is shown as the "next" option **602***b*. In the method **500**, this option is implemented by the step shown in the block **501**.

Yet another control option that can be used with an attention manager according to the invention enables the user to terminate display of the currently displayed set of content data and begin display of the set of content data displayed immediately prior to the terminated set. In FIG. **6**, this is shown as the "back" option **602***c*. In the method **500**, this option is implemented by the steps shown in the blocks **502** and **511**.

Still another control option that can be used with an attention manager according to the invention enables the user to terminate display of the currently displayed set of content data and remove that set of content data from the schedule so that the set will not be displayed in the future. This option is not shown in FIG. **6**. In the method **500**, this option is implemented by the steps shown in the blocks **503** and **512**. In a particular embodiment, this option can be implemented so that the set of content data is precluded from being displayed only during the current operation of the attention manager. In another particular embodiment, this option can be implemented so that the set of content data is removed from the content display system **203** entirely, i.e., the set of content data is no longer available for display. In this embodiment, the set of content data could only become available for display again if the user takes affirmative steps to re-obtain the set of content data, as described above with respect to step **401** of the method **400** (FIG. **4**).

Another control option that can be used with an attention manager according to the invention enables the user to prevent future display of the currently displayed set of content data until that set of content data has been updated. This option is not shown in FIG. **6**. In the method **500**, this option is implemented by the steps shown in the blocks **504**, **513**, **521**, **522** and **523** (referred to hereinafter as steps **504**, **513**, **521**, **522** and **523**, respectively). If this option is selected in step **504**, then an update flag is activated. The update flag can be a designated field associated with a particular set of content data in the database that contains all of the available sets of content data. As shown by step **521**, the method **500** identifies, before display of a next set of content data in the schedule, the identity of that next set, and determines (step **522**) whether the update flag has been activated for that set of content data. If the update flag has not been activated, then, in step **105**, the set of content data is displayed. However, if the update flag has been activated, then, in step **523**, a determination is made as to whether the set of content data has been updated since the last time that the set of content data was displayed. This step can be accomplished by checking an update monitor flag that can be a designated field of the database that is associated with the set of content data. If the update monitor flag indicates that the set of content data has been updated since the last time that the set of content data was displayed, then the set of content data is displayed (step **105**). Otherwise, the method **500** returns to the step **521** to identify the next set of content data in the schedule.

Yet another control option that can be used with an attention manager according to the invention enables the user to specify a level of satisfaction with the currently displayed content data. This option is not shown in FIG. **6**. In the method **500**, this option is implemented by the steps shown in the blocks **505**, **514** and **515**. Depending upon the level of satisfaction indicated in the step **514**, the schedule can be modified (step **515**) to show the set of content data more, less or at different times than was previously the case. This option can be implemented in any appropriate manner; one way is described immediately below.

The content display system scheduling instructions **312** can include instructions that evaluate a probability function each time that a set of content data in the schedule is presented for display, and either display or not display the set of content data dependent upon the evaluation of the probability function. The probability function can include consideration of a variety of factors (e.g., the amount of time that has passed since a particular set of content data has been updated), but for implementation of the instant option, the probability function includes a term n^p, where n is a constant between 1 and 2, and p is a variable that represents a user's preference for a particular set of content data. Initially, the value of p is 0. Each time that a user indicates a like or dislike for a set of content data (by, for example, selecting an appropriate option in a dialog box such as the dialog box **601**), the variable p is incremented or decremented,

respectively, by a predetermined amount. The content display system scheduling instructions **312** evaluate a stochastic probability function (e.g., a Gaussian probability function) using the evaluated probability function as an argument. If the result of evaluation of the stochastic probability function is "true", then the set of content data is displayed; if "false", then the set of content data is not displayed. As can be seen, then, initially (i.e., when p=0), the user has expressed no like or dislike of a set of content data and the set of content data is displayed or not according to other criteria. Incrementing or decrementing p (i.e., expressing like or dislike for a set of content data) causes the term n^p to increase or decrease exponentially, thereby increasing or decreasing the likelihood that the set of content data will be displayed.

Still another control option that can be used with an attention manager according to the invention enables the user to establish a link with another information source. In FIG. **6**, this is shown as the "more" option **602***d*. (In "wallpaper" embodiments of the invention, this option can be implemented so that any time the user clicks a mouse—or presses the "Enter" key on a keyboard—when the cursor is within the wallpaper, the link is made to the other information source.) In the method **500**, this option is implemented by the steps shown in the blocks **506**, **516** and **517**. Links can be established to any of a variety of information sources and types of information sources. Typically, the link will be made to an information source that provides information that is related to the content data which was being displayed when the link was established. Upon selection by the user of this control option, the information source is accessed and additional information retrieved for presentation to the user. A link can be made, for example, to any information source that is part of a network which can be accessed by the computer with which the attention manager is being used (though it is not necessary that the link be made through a network). For example, the attention manager can be implemented so that links can be established to locations on the World Wide Web using the appropriate URLs. Such links can be established using any of a variety of Web browser software programs, such as the Navigator software program made by Netscape Communications Corp. Links are enabled by appropriately specifying the location (e.g., a network address) of the information source. The location of an information source (or locations of information sources) can be specified by associating the location with the set of content data, for example, in a package file as described and illustrated above.

As shown in the method **500**, the attention manager continues to operate during the time that the link is established and the link is established to an information source from which it is possible to return to the attention manager (see step **517**). The presentation of the new information to the user can include an appropriate user interface mechanism that allows the user to request such a return to the attention manager. However, the capacity to return to operation of the attention manager may not always exist. In that event, the step **517** is not part of the method **500**; rather, the method **500** terminates after the step **516** and the user operates in the environment of the information source from that point forward. Such termination of the attention manager will frequently be the case where the link is made via a network to an information source.

Another control option that can be used with an attention manager according to the invention enables the user to obtain an overview of all of the content data available for display by the attention manager. This option is not shown in FIG. **6**, nor is it implemented in the method **500** of FIGS. **5**A and **5**B. The overview could be presented textually, pictorially or aurally. The overview information can be obtained either via a link to another information location (e.g, the location of the application manager **201**) as described above or from a memory associated with the content display system **203**, the overview information having been communicated to the content display system **203** when a set of content data was obtained.

Still another control option that can be used with an attention manager according to the invention enables the user to maintain display of the currently displayed set of content data **350** until such display is terminated by the user. This option is not shown in FIG. **6**, nor is it implemented in the method **500** of FIGS. **5**A and **5**B. Upon selection of this option, an appropriate user interface could be made to appear that allows the user to specify termination of the display. After termination of the display, the attention manager resumes normal operation, i.e., the next set of content data **350** is displayed.

The dialog box **601** also includes an additional option, the "cancel" option **602***e*. Selection of the "cancel" option **602***e* causes the dialog box **601** to be removed from the screen **600**. The dialog box **601** can be made to reappear again using any appropriate technique. For example, the application instructions **310** can include appropriate instructions to cause the dialog box **601** to reappear when the user makes an input to the computer using an input device.

As discussed above (see FIG. **2**), usage of the attention manager can be audited using audit instructions **340** (FIGS. **3**A and **3**C) that can be supplied by the application manager **201** to the content display systems **203**, either directly or via the content providing systems **202**. The audit instructions **340** can include instructions that cause a content display system **203** to record, as the attention manager is used, particular information (audit information) regarding use of the attention manager (or compute such information from other, more basic information recorded by the attention manager). The audit information can be stored by the content display system **203** in an appropriately structured database. The audit information can include, for example, the identity of each set of content data **350** displayed by the attention manager, the number of times that a set of content data **350** was displayed by the attention manager, the frequency (e.g., number of times per week) that a set of content data **350** was displayed by the attention manager, the times at which a set of content data **350** was displayed by the attention manager, a user-expressed satisfaction level for a particular set of content data **350**, and the last set of content data **350** displayed to a user before the user either "passively" (i.e., by making an input to the computer with an input device) or "actively" (i.e., by selecting a control option) terminated operation of the attention manager (of interest, since the user presumably was viewing the display screen when such interaction occurred). The audit instructions can also include instructions that compile and/or analyze the audit information in a desired manner. The audit instructions **340** can also include instructions that cause audit information to be transmitted to a remote site (e.g., the application manager **201** or a content providing system **202**). These instructions can include scheduling instructions that govern when the audit information is so communicated (e.g., after periodic time intervals), as well as instructions that identify the location (e.g., network address) of the remote site. The transfer of audit information can be accomplished, for example, using a conventional electronic mail mechanism, as known to those skilled in the art. The audit

instructions **340** can also include instructions that enable the content display system **203** to display audit information. Additionally, the audit instructions **340** can include instructions that enable the user to disable the audit function entirely, or that enable the user to prevent audit information from being transmitted to the application manager **201** and/or to content providing systems **202**. These last instructions could also be accompanied by operating instructions that provide a control option or options to the user, in a manner similar to that described above with respect to FIGS. **5A**, **5B** and **6**, that enable the user to select disablement of the audit function. The audit instructions **340** can also include instructions that cause the database of audit information to be erased at an appropriate time, such as after the audit information has been communicated to a remote site.

Auditing of use of the attention manager can be useful to both users of the attention manager and content providers for a variety of reasons. Such auditing can be used, for example, to illustrate to content providers the value of the attention manager as a tool for disseminating the content provider's information, by showing the content providers how many content data display systems **203** are displaying the content provider's content data. The auditing can also give content providers insight into the interests of computer users, enabling the content providers to better target the information that the content providers provide. The auditing can also indicate to a user the amount and types of the information that the user has been receiving.

Various embodiments of the invention have been described. The descriptions are intended to be illustrative, not limitative. Thus, it will be apparent to one skilled in the art that certain modifications may be made to the invention as described without departing from the scope of the claims set out below. For example, though it is contemplated that an attention manager according to the invention will typically be used to occupy the peripheral attention of a human computer user, generally the attention manager can be used to occupy the attention of any sentient being. For example, the attention manager may be useful in occupying the attention of domesticated animals such as dogs or cats, or providing training (i.e., audio that can be repeated) for a "talking" bird such as a parrot.

We claim:

1. A system for engaging the peripheral attention of a person in the vicinity of a display device of an apparatus, comprising:

a content display system associated with the display device, the content display system including means for receiving a set of content data and a set of instructions for enabling a display device to selectively display, in an unobtrusive manner that does not distract a user of the apparatus from a primary interaction with the apparatus, an image or images generated from a set of content data, the content display system further including means for using the display device to selectively display the image or images using the set of instructions;

a content providing system including means for providing a set of content data to the content display system;

means for providing to the content display system a set of instructions for enabling a display device to selectively display an image or images generated from a set of content data;

first communication means for enabling communication between the means for providing and the content display system;

second communication means for enabling communication between the content providing system and the content display system; and

means for auditing the display of sets of content data by the content display system.

2. A system for engaging the peripheral attention of a person in the vicinity of a display device of an apparatus, comprising:

means for acquiring a set of content data from a content providing system;

means for selectively displaying on the display device, in an unobtrusive manner that does not distract a user of the apparatus from a primary interaction with the apparatus, an image or images generated from the set of content data; and

means for detecting an idle period of predetermined duration, wherein the means for selectively displaying displays the image or images automatically after detection of the idle period.

3. A system as in claim **2**, further comprising means for detecting a predetermined user interaction with the apparatus subsequent to detection of the idle period, wherein occurrence of the predetermined user interaction causes the means for selectively displaying to stop displaying an image or images generated from a set of content data.

4. A system for engaging the peripheral attention of a person in the vicinity of a display device of an apparatus, comprising:

means for acquiring a set of content data from a content providing system;

means for selectively displaying on the display device, in an unobtrusive manner that does not distract a user of the apparatus from a primary interaction with the apparatus, an image or images generated from the set of content data;

means for displaying one or more control options with the display device while the means for selectively displaying is operating;

means for selecting a displayed control option; and

means for controlling aspects of the operation of the system in accordance with a selected control option.

5. A system as in claim **4**, wherein:

the control option enables the user to request termination of operation of the system; and

the means for controlling terminates operation of the system.

6. A system as in claim **4**, wherein:

the means for selectively displaying further comprises means for scheduling the display of an image or images generated from a set of content data;

the control option enables the user to request display of a next image or images generated from a next set of content data; and

the means for controlling displays the next image.

7. A system as in claim **4**, wherein:

the means for selectively displaying further comprises means for scheduling the display of an image or images generated from a set of content data;

the control option enables the user to request display of a previous image generated from a previous set of content data; and

the means for controlling displays the previous image.

8. A system as in claim **4**, wherein:

a plurality of sets of content data are acquired by the system;

the means for selectively displaying further comprises means for scheduling the display of the image or images generated from the sets of content data;

the control option enables the user to remove a set of content data from the schedule; and

the means for controlling removes the set of content data from the schedule.

9. A system as in claim **4**, wherein:

a plurality of sets of content data are acquired by the system, at least one of the sets of content data capable of being occasionally updated;

the means for selectively displaying further comprises means for scheduling the display of the image or images generated from the sets of content data;

the control option enables the user to prevent the display of an image generated from a designated set of content data until the designated set of content data has been updated; and

the means for controlling prevents the display of the image generated from the designated set of content data until the designated set of content data has been updated.

10. A system as in claim **4**, wherein:

a plurality of sets of content data are acquired by the system;

the means for selectively displaying further comprises means for scheduling the display of the image or images generated from the sets of content data;

the control option enables the user to specify a satisfaction level for a currently displayed image from a current set of content data; and

the means for controlling revises the schedule in response to the specified satisfaction level.

11. A system as in claim **4**, wherein:

the control option enables the user to establish a link with an information location; and

the means for controlling establishes the link with the information location.

12. A method for engaging the peripheral attention of a person in the vicinity of a display device of an apparatus, comprising the steps of:

acquiring a set of content data from a content providing system;

detecting an idle period of predetermined duration; and

selectively displaying on the display device, in an unobtrusive manner that does not distract a user of the apparatus from a primary interaction with the apparatus, an image or images generated from the set of content data, wherein the step of selectively displaying further comprises the step of displaying the image or images automatically after detection of the idle period.

13. A computer readable medium encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device during operation of an attention manager, comprising:

acquisition instructions for enabling acquisition of a set of content data from a specified information source;

user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source;

content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data, the content data scheduling instructions further comprising duration instructions for enabling specification of the duration of time that the image or images generated from a set of content data can be displayed, wherein the duration instructions specify a duration of time that is dependent upon the particular time at which the image or images generated from a set of content data are displayed after the attention manager begins operating; and

display instructions for enabling display of the image or images generated from the set of content data.

14. A computer readable medium encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device during operation of an attention manager, comprising:

acquisition instructions for enabling acquisition of a set of content data from a specified information source;

user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source;

content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data, the content data scheduling instructions further comprising duration instructions for enabling specification of the duration of time that the image or images generated from a set of content data can be displayed, wherein the duration instructions specify a duration of time that is dependent upon the number of previous times that the image or images have been displayed during a continuous operation of the attention manager; and

display instructions for enabling display of the image or images generated from the set of content data.

15. A computer readable medium encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device during operation of an attention manager, comprising:

acquisition instructions for enabling acquisition of a set of content data from a specified information source;

user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source;

content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data, wherein the content data scheduling instructions further comprise sequencing instructions that specify an order in which the images generated from a set of content data are displayed; and

display instructions for enabling display of the image or images generated from the set of content data.

16. A computer readable medium as in claim **15**, wherein the sequencing instructions further specify the duration of the display of each image or images generated from each set of content data.

17. A computer readable medium encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device during operation of an attention manager, comprising:

acquisition instructions for enabling acquisition of a set of content data from a specified information source;

user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source;

content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data, wherein the content data scheduling instructions further comprise saturation instructions that constrain the number of times that the image or images generated from a set of content data can be displayed; and

display instructions for enabling display of the image or images generated from the set of content data.

18. A computer readable medium, for use by a content display system, encoded with one or more computer programs for enabling acquisition of a set of content data and display of an image or images generated from the set of content data on a display device during operation of an attention manager, comprising:

acquisition instructions for enabling acquisition of a set of content data from a specified information source;

user interface installation instructions for enabling provision of a user interface that allows a person to request the set of content data from the specified information source;

content data scheduling instructions for providing temporal constraints on the display of the image or images generated from the set of content data;

display instructions for enabling display of the image or images generated from the set of content data;

content data update instructions for enabling acquisition of an updated set of content data from an information source that corresponds to a previously acquired set of content data;

operating instructions for beginning, managing and terminating the display on the display device of an image generated from a set of content data;

content display system scheduling instructions for scheduling the display of the image or images on the display device;

installation instructions for installing the operating instructions and content display system scheduling instructions on the content display system; and

audit instructions for monitoring usage of the content display system to selectively display an image or images generated from a set of content data.

* * * * *

United States Court of Appeals
for the Federal Circuit
INTERVAL LICENSING LLC v. AOL, INC., APPLE, INC., GOOGLE INC., YAHOO!, INC., 2016-2502, -2505, -2506, -2507

CERTIFICATE OF SERVICE

I, Robyn Cocho, being duly sworn according to law and being over the age of 18, upon my oath depose and say that:

Counsel Press was retained by HEIM, PAYNE & CHORUSH, LLP, counsel for Appellant to print this document. I am an employee of Counsel Press.

On **December 16, 2016** counsel has authorized me to electronically file the foregoing **Brief for Plaintiff-Appellant** with the Clerk of Court using the CM/ECF System, which will serve via e-mail notice of such filing to all counsel registered as CM/ECF users, including the following principal counsel:

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Paper copies will also be mailed to the above principal counsel at the time paper copies are sent to the Court.

Upon acceptance by the Court of the e-filed document, six paper copies will be filed with the Court within the time provided in the Court's rules.

December 16, 2016

/s/ Robyn Cocho
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