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- **Gupta, Anoop**  
Woodinville, WA 98072 (US)
- **Jancke, Gavin**  
Sammamish, WA 98075 (US)
- **Venolia, Gina**  
Kirkland, WA 98033 (US)

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(71) Applicant: **MICROSOFT CORPORATION**  
Redmond, Washington 98052-6399 (US)

(74) Representative: **Grünecker, Kinkeldey,  
Stockmair & Schwanhäusser Anwaltssozietät**  
Maximilianstrasse 58  
80538 München (DE)

(72) Inventors:  
• **Cadiz, Jonathan J.**  
Redmond, WA 98072 (US)

(54) **A system and process for providing dynamic communication access and information awareness in an interactive peripheral display**

(57) The system and method of the present invention provides peripheral awareness of information to a user. The information to be provided is either determined automatically, or specified by the user. Once the information to be provided is determined or specified, it is automatically tracked or watched via at least one conventional communications interface for accessing one or more conventional communications sources. Current information is then automatically dynamically provided in an interactive peripheral display which minimizes any potential distraction to the user. Determining or specifying, tracking or watching, and providing the information is accomplished using at least one customizable dynamic encapsulated object, a "ticket," that when paired with a "viewer," provides peripheral awareness of information to the user. Further, in one embodiment, the tickets are sharable among users, and may be copied, cut, pasted, saved, transmitted, dragged and dropped from web pages, etc., like any other electronic file using conventional techniques.

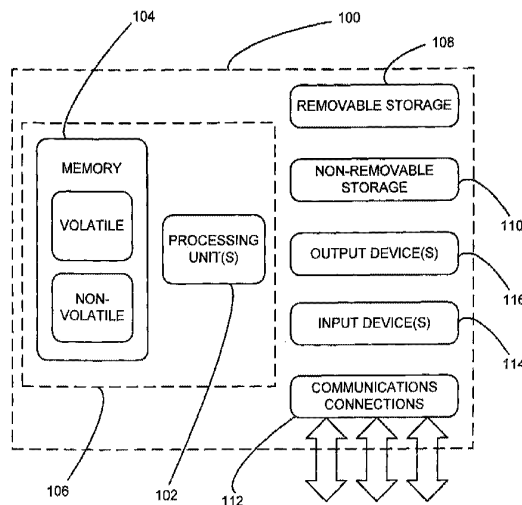


FIG. 1

**Description****BACKGROUND****Technical Field:**

**[0001]** The present invention involves a new system and process for providing dynamic communication access and information awareness in an interactive peripheral display.

**Related Art:**

**[0002]** By way of background, in today's information saturated environments, such as the Internet, a local or remote computer network, or any combination of the Internet and such networks, it is often difficult for a user to keep track of the potentially large amounts and variety of communications and information which the user may be interested in. Such communications and information include, for example, email, instant messaging, file transfers, local weather, appointments, schedules, personal contacts, statistical information, file status, stock quotes, sports scores, local traffic, or any other type of communications or information that may be of interest to the user. This problem becomes particularly acute where the communications and/or information are dynamic, such that rapid, numerous, or large changes to the communications status or channels, or in the information of interest to the user results in out of date communications and/or information that is often relatively useless to a user.

**[0003]** In response to this problem, several conventional schemes have been developed to assist users in attempting to keep track of specific communications or information without requiring a user to manually search out or manually check for updates to the communications or information each time the user wants to examine the communications or information. However, such schemes are typically limited by what types of communications or information can be tracked or displayed, by the manner in which the communications or information is accessed or otherwise provided to the user, or by the inability to facilitate sharing of the communications or information between users. Further, conventional schemes that have attempted to address these problems tend to be limited by an inability to provide a single interface that allows for concurrent information retrieval, display or access in combination with communications and communication access points in a dynamic integrated environment. Consequently, users are often left with cluttered displays which provide access or interaction with either particular types of communications, or with specific information, but not with both communications and information access and interaction in an integrated environment.

**[0004]** Several conventional messaging type schemes have attempted to partially address some of

these problems. However, such schemes typically provide relatively large windows that take up substantial amounts of screen or display real estate. Further, such schemes, while providing some communications capabilities along with some information gathering or display capabilities, tend to separate the communications capabilities from the information capabilities via one or more tabs or the like. Consequently, particular information can not be easily shared or communicated from within the applications provided by these schemes. Further, such schemes become unwieldy as the amount of information being tracked by a user increases, and as the number of communications contacts maintained by the user increases. In particular, as the amount of contacts and/or information increases, the user is forced to scroll through large amounts of data or communications channels to find what he or she is looking for.

**[0005]** For example, several conventional messaging type schemes provide similar capabilities for keeping track of or watching information, such as for example stock quotes, weather, news, or other information via the Internet or some other local or remote network, or some combination thereof. Further these conventional schemes also provide for some sort of communications access such as, for example, text instant messaging, file transfer, email, etc., via one of a number of communications channels for contacts in one or more groups of contacts. Consequently, a user is able to keep track of particular information of interest, as well as to communicate with particular people or entities. Unfortunately, with these schemes, the user can not do both simultaneously. He is forced to tab between the different types of information and the communications capabilities. Therefore, the user is unable to share data observed via the different information tabs with contacts in the communications tab unless the user manually saves or copies the information, switches tabs, then manually creates a message to a particular contact, and either attaches or pastes the information to that message.

**[0006]** Further, because these conventional schemes tend to have a number of tabs, they require a fairly large window in order to display the information and associated controls or icons. Unfortunately, such windows tend to get buried under other application windows when the user is using other applications. Consequently, the user is often forced to interrupt his or her flow of work to switch between windows. This particular problem has been addressed by some of these schemes by providing an option to always keep the window on top. Consequently, while solving the problem of burying the messaging window, a new problem is created. Specifically, the messaging window then occludes a potentially large part of any other open application window. While it is possible to manually resize the different application windows and to move them around the screen in an attempt to give each window its own space, such manual user intervention can be both time consuming and aggravating for the typical user.

**[0007]** At least one conventional scheme has attempted to address some of the problems of the aforementioned schemes. For example, one conventional scheme provides an application that allows a user to customize at least one icon in a scrollable strip along one edge of a computer display device. This scheme provides iconized links to particular information sources, and uses conventional techniques to populate each customized icon with information retrieved from the information sources. However, this scheme has several important limitations.

**[0008]** In particular, while this scheme provides for gathering and providing information to a user, it fails to provide the level of communications capabilities offered by the aforementioned messaging schemes. For example, this scheme does not provide a means for initiating communication via an icon, so while an icon may provide a communication status, such as a number of received messages, it does not provide a means for responding to such messages. Further, this scheme does not provide for nesting or otherwise organizing groups of icons in order to aggregate multiple icons. In other words, opening the window associated with one icon does not provide access to further levels of grouped icons. Consequently, it is difficult to organize icons where a large number of icons are used. In addition, the icons of this scheme are not easily transportable. In other words, there is no real mechanism for transferring icons between users. Instead, users are required to obtain the icons from an application used for managing the icons. Other limitations of this scheme include a lack of an ability to resize the window containing the scrollable strip used for displaying the icons. Further, with this scheme, if a user adds too many items, another row or strip is automatically created within the window, even if that row has only one icon. Consequently, this scheme can potentially cause a large waste of valuable display space.

**[0009]** A related scheme allows a user to customize a scrolling ticker type display window to provide continuously updated scrolling information from a predefined set of available information. While useful, this scheme is even more limited than the prior scheme for several reasons. Most important among these limitations is that the set of information that is available to this scheme is predefined. Thus, if the information type and source is not listed as an option with this scheme, it is simply not available. However, users are provided with limited control over certain information options, such as, for example, specific stock symbols for stock quotes, choosing areas or topics of news to generate an automatic alert, or choosing particular cities to generate a weather report. Another limitation is that users are not able to add or edit information sources, such as by modifying the icons as described above. Further limitations of this scheme include that fact that since the ticker scrolls, there is no guarantee that all the information of interest will be visually available at any given time. Specifically,

if the information of interest to a user is not currently visible, the user must wait until the information scrolls into view. Consequently, such a scheme can become very distracting to the user as the user is forced to direct a large amount of attention to the display in order to retrieve desired information. Further, because the scrolling ticker is in constant motion, it is in itself potentially very distracting to a user as it creates a persistent motion in the user's peripheral vision. Finally, the communications capability of this scheme is virtually nonexistent in comparison to the aforementioned messaging schemes.

**[0010]** Still other schemes for providing custom information views or displays involve a technique known as "web scraping." In general, such schemes allow a user to specify particular portions of unique Internet Web pages, i.e., source web pages, to be displayed on a single customized web page. Consequently, while such schemes provide for information retrieval and display, they do not provide for communications capability.

**[0011]** For example, one web scraping scheme allows users to "clip" relevant data and content from various Internet web sites and pull it all together in one dynamic browser page, called a "view." This view is effectively a composite web page. Thus, as any of the source web pages are changed, the composite web page is automatically updated. Further, this scheme allows users to edit views in a variety of ways, such as by adding, deleting and rearranging data elements and personalizing the view with the users own inputs. In addition, this scheme provides a method for transferring views between users. However, this scheme suffers from many of the same basic limitations described above with respect to the aforementioned schemes. Such limitations include an inability to nest or organize views, or to arrange for a plurality of views to be displayed simultaneously. Also, as mentioned above, such schemes typically provide little or no communications or messaging capabilities.

**[0012]** Further limitations of web scraping include the fact that the views of this scheme must be opened in a window that typically takes up a substantial portion of a display device, if not the entire display device, and thus, it cannot provide an unobtrusive method for providing information to the user. In addition, typical web pages, as well as specific content of those web pages, are typically not designed to minimize the area in which information is displayed. In other words, such web pages and content are simply not designed with the idea of squeezing lots of important information into very small spaces. Consequently, the end result of web scraping is a composite web page that tends to be a very inefficient use of screen space. Further, if a portion of the web page that is scraped or otherwise clipped from an existing web page includes an animation, the web page can be very distracting if it's in the user's peripheral vision. Finally, because the web scraping technique is effectively a patchwork of distinct elements, the composite web page

resulting from such techniques is typically an unappealing jumble of disparate elements that were never visually designed to appear together on a single page.

**[0013]** Consequently, what is needed is new system and process for automatically providing dynamic communication access and information awareness in an interactive peripheral display without requiring a user to tab between communications channels or information types. Further, such a system and process should not require a user to choose from a predefined list of communication access points and information categories or sources, but instead should allow for creation and customization of communications access points and information sources. Such communications access points should include communications channels for contacting other entities, such as, for example, people, businesses, or organizations, along with the current availability of each of the contacts via any of a variety of contact methods, such as email, voicemail, messaging servers, telephone, etc. The information sources should include any desired information elements, such as, for example, specific information types, information categories, or information sources. In addition, this system and process should allow users to customize and aggregate or organize any desired communication channels or access points, or any desired information sources into any desired number of groups or nested groups. Also, these groups or nested groups should be capable of being expanded by the user to allow the user to view nested groups or communication access points or information elements within these groups or nested groups. Finally, this system and process should provide for sharing of pre-defined or user definable communications access points and/or information elements between users.

## SUMMARY

**[0014]** In general, the present invention solves the aforementioned problems, as well as other problems that will become apparent from an understanding of the following description by automatically providing dynamic communication access and information awareness in an integrated interactive peripheral display. The present invention provides this capability either automatically, and/or by allowing a user to specify particular information or communications contacts of interest to that user. Customized dynamic thumbnails representing each contact and each particular information element are then automatically displayed.

**[0015]** These dynamic thumbnails or "items" generally comprise a combination of a "ticket" describing the information or contact of interest and a specialized "viewer" for displaying whatever information or communications contact is represented by the ticket. Further, in accordance with the present invention, in one embodiment, tickets are sharable among users via conventional techniques, and may be copied, cut, pasted, stored, saved, transferred, transmitted, emailed, dragged and

dropped from web pages, etc., like any other electronic file. The system and process of the present invention then either automatically tracks or receives the current state of the information and communications contacts described by the tickets, and dynamically provides current information as well as availability and status of the communications contacts in an interactive "peripheral awareness" interface for displaying the items. The peripheral awareness interface displays information and/or communications contacts in such a way as to minimize any potential distraction or interruption to the user.

**[0016]** In the context of the present invention, the concept of "peripheral awareness" is best explained by the following discussion. In general, the peripheral awareness interface of the present invention takes advantage of people's innate ability to receive information about the world around them without significantly interrupting their focal tasks. One trivial example of this innate ability of people to perceive information in a peripheral manner without interrupting their focal task is that a person might overhear a discussion in the hallway between Bob and Jane and realize that Jane has returned from her vacation. The present invention takes advantage of this ability with the peripheral awareness interface. Such peripheral awareness interfaces are always on and visible rather than being a discrete user interface event that is shown when there is a state change of some information. Thus, peripheral awareness, in accordance with the present invention does not blatantly draw the user's attention to new or updated information immediately, but instead makes it available in the periphery so that it may be observed if and when the user decides to glance that way. Further, in one embodiment, to increase the effectiveness of user notification, the peripheral awareness interface utilizes both strategies of peripheral awareness and notification, i.e., audible and/or visible alert, depending upon the time sensitivity or priority of the information. The peripheral awareness interface of the present invention provides a display area on a user's display device for displaying items as described herein.

**[0017]** Further, with respect to communications contacts, the system and method of the present invention provides a "person-centric interface" for interacting with the contacts. This person centric interface is designed such that people or other entities are brought to the forefront of the peripheral display so that communications with particular persons or entities may be reviewed or initiated easily, while the communications availability of such people or entities may be understood by a user by simply glancing at the peripheral display. This capability is accomplished by displaying pictures, images, icons, avatars, etc., within each item that represents a particular communications contact for visually representing the communications availability or status for each communications contact. In alternate embodiments, this person centric interface further includes contact specific information such as, for example, communication history, and communications availability, as well as commu-

nications access and interaction for particular contacts via any of a number of access points or communication channels, such as, for example, email, messaging servers, voice mail, telephone numbers, peer-to-peer file transfer, etc.

**[0018]** Specifying, tracking or receiving, and providing the information and communications capabilities, as noted above, is accomplished in accordance with the present invention through the use of at least one customizable dynamic encapsulated object, hereinafter referred to as a "ticket," that when paired with a "viewer," provides peripheral awareness of information of interest to a user. As noted above, the combination of a ticket and a viewer is termed an "item."

**[0019]** In general, a ticket is represented by a data structure such as an XML data file. Each ticket includes instructions as to what information or communications contact is to be represented by the ticket as well as pointers to particular "services" that represent any of a number of conventional means for interacting with the information or communications contacts. These services are automatically or manually selected from a predefined or user definable library of services. In particular, the different services represent shared code or functions that provide functionality for accessing, receiving, retrieving, and/or otherwise interacting with any conventional information, source of information, or communications contact. Further, it should be noted that in one embodiment multiple services are used in combination for providing complex interactions with any conventional information, source of information, or communications contact.

**[0020]** In the context of the present invention, one example of a "service" is the functionality necessary for monitoring an email folder by connecting to a conventional MAPI server. Another example of a service is functionality for sending or receiving email messages. Related services provide functionality for communicating with contacts or transferring information via any number of conventional methods, such as, for example instant messaging or peer-to-peer communications schemes. Another example of a service is functionality to convert a text file from one language to another. A further example of a service is functionality necessary for monitoring a database. Still another example of a service is functionality for receiving or retrieving data from a web site or a remote server. Clearly, any conventional method for interacting with any conventional information, source of information, or communications contact can be implemented as a shared service for use by one or more tickets in accordance with the present invention.

**[0021]** Further, as noted above, each ticket's instructions includes a pointer to one of a number of specialized viewers having the capability to display whatever type of information or communications contact is represented by the ticket. In other words, each ticket represents a combination of the information or contact that a user desires to keep track of along with a definition of how

the user desires to view that particular information as well as the ability to use any of a number of conventional means for accessing and/or interacting with the information or contact.

5 **[0022]** For example, information of interest to a user may include statistical information relating to a particular electronic file residing on a remote electronic database. Given this simple example, the user may be interested in knowing how many people have read the electronic  
10 file, or whether it has been modified. Consequently, the customizable ticket includes instructions for using a "service" for linking to the remote server hosting the electronic file such that the can collect the statistical information as it becomes available. Further, the ticket includes instructions as to what data is to be displayed, and which viewer is to be used to display that data. Such instructions for displaying the data may simply include instructions to display the number of people that have  
15 read the file, and/or instructions to change the color of the displayed information when the file has been modified by anyone other than the user. Clearly, this example is not meant to limit what information or data may be displayed, or how the information or data is to be displayed, as many other types of statistical or other data  
20 relating to such files, or to any other information of interest, can be collected and/or displayed in accordance with the present invention.

**[0023]** As discussed above, each ticket is paired with a "viewer" to create an "item." These viewers graphically  
25 display the ticket as a resizable thumbnail or icon-sized window having the information or contact data retrieved via one or more of the services in accordance with the aforementioned ticket instructions. In particular, the viewer is capable of dynamically displaying a ticket having textual, audible, or graphical information, including  
30 still or live images, or any combination of textual, audible, or graphical information. For example, one viewer type is capable of displaying contact information, i.e. a "person ticket" as described below, another is capable of displaying specific email information, such as, for example, number of messages received, or number of  
35 messages from a particular source, another viewer is designed to interact with a database to provide a summary of particular information from the database in the thumbnail. Further examples of viewer types include viewers capable of displaying still images, video images, a summary of communications status, the results of a database query, etc. Clearly, any type of viewer can  
40 be designed to be associated with any corresponding type of information to ensure that any possible information can be displayed.

**[0024]** In addition to the just described benefits, other advantages of the present invention will become apparent from the detailed description which follows hereinafter when taken in conjunction with the accompanying  
45 drawing figures.

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