PERSONAL DIGITAL ASSISTANT WITH STREAMING INFORMATION DISPLAY

BACKGROUND OF THE INVENTION

[0001] Reference is made to U.S. patent application Ser. No. _____ (Docket No. 10004932), "Method and Apparatus To Deliver Personalized Travel Data", to Susan Nakashima, filed on the same day herewith, assigned to the same assignee, and which may contain related information.

[0002] Personal digital assistants (PDA's) are well known. These small, hand-held computer systems perform many of the functions that paper calendars and paper notepads used to provide, but PDAs add additional capabilities and functionality that notepads, notebooks, and calendars were unable to provide, including, but not limited to, instantaneous retrieval and display of stored information.

[0003] A PDA is typically comprised of a microprocessor or microcontroller (i.e., a small, processor that executes a program of stored instructions) coupled to a liquid crystal display (LCD) screen or display on which symbols, text or icons are displayed and, into which signals can be input and detected thereby providing a two way communications capability by which information can be stored in an retrieved from memory that is part of the personal digital assistant computer. By way of example, most PDA's have electronic clocks and calendars by which a user can keep track of scheduled events or appointments, descriptions and/or dates or other information related to which, is entered into the PDA by means of character recognition software that reads signals that are input to the PDA through a pen or stylus contacting the screen or other touch sensitive input area of the PDA device. By an appropriate input signal to either a button, a soft key, or a particular key stroke entered into the PDA input screen, information that was previously entered or which might have been calculated by the microprocessor, can be retrieved for display by the user.

[0004] Information can also be downloaded into a PDA by way of a connection or coupling link between the PDA and a personal computer. Such a link is sometimes referred to as a Hot Sync® or "hot link" and might be realized by an infrared signals between the PC and PDA or a hard-wired connection. Information can be sent from a PDA into a PC using the same process. The process of loading data into a PDA or reading information from a PDA is frequently referred to as "hot linking" the PDA such that information in one machine is transferred into and synchronized with information in the other machine.

[0005] While PDA's might be very useful to record user-specified or user-supplied information, computational capabilities of a PDA lends itself to providing even more functionality to these devices. Inasmuch as PDA's are becoming more and more commonplace, they provide a mechanism by which additional functionality can be provided to users, which might provide even more tangible benefits than heretofore realized. Depending upon the nature of circuitry added to a PDA, still other uses might become commonplace. One use to which a PDA might be put is the display of information and data from third-parties, or the Internet. A method and apparatus by which a personal digital assistant might provide streaming information to a user might provide even more benefits than heretofore realized.

SUMMARY OF THE INVENTION

[0006] There is described a personal digital assistant comprised of a display and input interface device that displays in a limited region thereof, and analogous to a ticker tape-format display, a stream of information, preferably collected and supplied to the PDA user by third party service providers but also possibly provided by virtually any information source.

[0007] Such a personal digital assistant preferably includes a communication interface (e.g., a wireless link; infrared link to a P.C., or a direct connection) by which information-bearing signals are received from an information service provider for display on the PDA display device. Paid advertising can be inserted into the stream of information to be displayed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] **FIG. 1** shows a simplified representation of a personal digital assistant or "PDA" showing the typical form factor for the PDA, including a touch-sensitive LCD screen on which text and icons are made visible and on which a user's key strokes can be made and recognized by the PDA as "input."

[0009] **FIG. 2** shows a simplified block diagram of the functional elements of a personal digital assistant by which an information stream from an information service provider can be displayed on the PDA.

[0010] **FIG. 3** shows an exemplary display of an information stream with embedded advertisements and how it might appear on a personal digital assistant display device.

[0011] **FIG. 4** is a flow chart depicting an exemplary process by which an information stream that includes embedded advertising messages would be received and processed for display on a PDA.

[0012] **FIG. 5** shows another flow chart of a process by which information from an information service provider might be correlated with data stored locally within the PDA so as to display only information of interest to the PDA user.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] **FIG. 1** depicts a simplified representation of a personal digital assistant or PDA **100**. These battery-powered devices typically include a liquid crystal display screen **102** that serves as both an output display device (on which information is displayed for the PDA user) and an input device into which signals or information from the user are input into and/or read or accepted by the PDA for processing and/or storage. Symbol recognition software within the PDA detects and "reads" the movement of a stylus on a touch-sensitive screen and transforms the stylus' movements into text or symbols or other key stroke actions. With practice, the touch-sensitive screen and stylus can function like the keyboard of a personal computer, which can itself function as a personal digital assistant. For purposes of claim construction, the term PDA or personal digital assistant and laptops or personal computers are considered to be equivalent devices and interchangeable.

[0014] Some PDAs display icons on the PDA screen **102** and used as a shorthand method by which embedded func-