

tions of the PDA can be invoked. By way of example, an icon of a telephone might invoke the storage or retrieval of telephone numbers when the telephone icon is "selected" by the user.

[0015] A pen-like device, referred to herein as a "stylus" **106** (typically stored within the PDA housing) is used to provide input signals to the PDA via a touch sensitive region **108** on the LCD screen **102** and also to toggle touch sensitive icons **104**, **110**, **112**, **114**, and **116** displayed on pre-determined locations of the screen **102**, as well as trigger mechanical switches **116**, **118**, and **120**. The stylus **106** is typically a small, plastic shaft or rod having a tip or point, the tip or point of which is small enough to selectively touch small-area icons on the screen.

[0016] Additional functionality and benefits of a PDA are realized by augmenting a PDA with the ability to display large amounts of data or information on the small-area screen **102**. In the preferred embodiment, information is displayed on the screen **102** in one or more screen regions in which information appears in streams, analogous to a so-called ticker tape, that is scrolled across the screen in a limited portion thereof, perhaps one or more individual "lines" of the screen. In appropriately -equipped PDAs, (equipped with an appropriate wireless communications capability) information can be displayed continuously, on a real time, or nearly real-time basis.

[0017] Given the fact that the PDA display screen **102** is of limited size, which is required for the PDA to be "portable," the preferred method for displaying large amounts of information on a personal digital assistant display device (which, for claim construction purposes, is hereafter considered to be a display and input device) is to format information to be displayed on the PDA screen, into a ticker-tape type display. By scrolling information one, window at a time, or repeating a portion of the text that is scrolled, large amounts of information can be scrolled across the PDA display and input device or screen **102**.

[0018] In the preferred embodiment, as shown in FIG. 1, one or more individual lines or regions **122** of the PDA display and input device **102**, can be set aside for the exclusive display of streams of information that might be provided to the PDA **100** from an external information service provider. This dedicated, predetermined region of the display and input device **102** can be arranged either horizontally or vertically such that information (text, icons, or other symbols or mnemonics) can be continuously or repetitively scrolled across the screen, (left to right, or right to left) perhaps at a user-specified rate and format, to display on the PDA virtually any amount of information.

[0019] In one embodiment, information can be scrolled onto the screen to fill the display area. The information can be left for a predetermined time, then replaced by successive text. Alternatively, information might scroll continuously, or, be displayed and left on the screen until the PDA user toggles the next window of information using the stylus.

[0020] As shown in FIG. 1, a one (or more) line display region or area **122** is set aside or allocated for displaying streaming information, which in the preferred embodiment is information provided by the Hewlett-Packard Instant Delivery™ (HPID) service. (When not displaying an information stream, the one-line display region **122** can be used

for other display purposes.) HPID is an information collection service that searches for and collects information from a variety of Internet (i.e. the world wide web) sources (such as newspapers, periodicals or electronic media). HPID preferably collects only certain types of information that comports with user-specified criteria or specifications, which are typically retained in an HPID subscriber preference file. By way of example, a subscriber can specify the retrieval of information or news related to particular topics of interest to the subscriber. Conversely, advertisers can place ads to individuals with certain interests or particular demographic characteristics.

[0021] While HPID selectively collects information of interest from newspapers and other on-line publications, and also prepares such information for printing on a user's printer, alternate embodiments of the invention would certainly include displaying an entire issue of a publication, or merely headlines thereof, additional data such as transportation schedules, fares and fare discount information, weather forecasts and related climate data, local lake or river levels, or individual stock quotes available from one or more exchanges can also be displayed. For claim construction purposes, data or information that is collected from any source by an information collection service provider, for direct or indirect delivery to and display on a PDA, are considered to be equivalents. By using a third party information service provider, such as HPID information and/or data that is sent to, or to be displayed on the PDA, can be limited to subject matter of interest to the PDA user—perhaps avoiding overwhelming the PDA as well as the user with unwanted data.

[0022] The orientation of the PDA's information display line on the screen **102**, as well as the position, size, resolution, scroll direction, or the repetition of certain information streams can all be readily controlled by appropriately programming or enabling PDA software, as well as providing the appropriately capable hardware. Soft keys **114**, **110**, or **112**, or perhaps the electrical switch contacts **116**, **118**, and **120** on the PDA can be used to toggle or control information display provided by the PDA.

[0023] FIG. 2 shows a simplified block diagram of the functional components of a preferred embodiment of a PDA **200** by which information can be transferred to and from the PDA **200** via signals sent over a wireless link **202**. By using a wireless data link, real-time information updates can be continuously delivered to the PDA **200**, thus providing a truly portable, and possibly bi-directional information link to the PDA user through which only pertinent information would be delivered. For purposes of claim construction, equivalents to a wireless radio link include an infrared data link provided by an infrared transmitter and receiver and a direct, i.e. hard-wired network connection, such as that provided by an Ethernet network connection or even a dial-up modem connection, which are communication interface devices and methodologies known to those skilled in the art.

[0024] In FIG. 2, the PDA **200** is shown to include a two way radio transceiver **204** such as a cellular telephone (or PCS)-type transceiver but also possibly including a two way paging device by which data modulated onto an RF carrier and received in an antenna **206** is demodulated and recovered for recognition and processing by a microprocessor or