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December 4, 1997

ATTORNEY DOCKET NO. 3384.0115-00

Box PATENT APPLICATION
Assistant Commissioner for Patents

Washington, D.C. 20231

Re: New U.S. Patent Application
Title: NAVIGATION TOOL FOR GRAPHICAL USER INTERFACE
Inventors: Brian Finlay BEATON, Colin Donald SMITH,
and Bruce Dale STALKIE

Sir:

We enclose the following papers for filing in the United States Patent and Trademark Office in connection with the above patent application.

- a. Application - 18 pages, including 2 independent claims and 22 claims total.
- b. Drawings - 14 sheets of informal drawings, containing 22 figures.
- c. Declaration and Power of Attorney.
- d. PTO Form 1595 - Recordation Cover Sheet.
- e. Assignment to Bell-Northern Research Ltd.
- f. A check for \$874.00 representing a \$790.00 filing fee, \$44.00 for additional claims, and \$40.00 for recording the Assignment.

Please accord this application a serial number and filing date and record and return the Assignment to the undersigned.

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Box PATENT APPLICATION

December 4, 1997

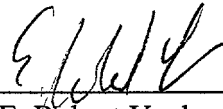
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The Commissioner is hereby authorized to charge any additional filing fees due and any other fees due under 37 C.F.R. § 1.16 or § 1.17 during the pendency of this application to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By:



E. Robert Yoches
Reg. No. 30,120

DOCKET ALARM

NAVIGATION TOOL FOR GRAPHICAL USER INTERFACE

RELATED APPLICATIONS

5 This application is related to U.S. patent application, Serial No.
08/____,____ (Atty. Docket No. 3884.0116-00), entitled INTELLIGENT TOUCH
DISPLAY; and U.S. patent application, Serial No.08/____,____ (Atty. Docket No.
3884.0117-00), entitled CONTEXTUAL GESTURE INTERFACE, both of which
are filed concurrently herewith, and both of which are hereby incorporated by
10 reference.

BACKGROUND OF THE INVENTION

The present invention relates generally to graphical user interfaces (GUI),
and more particularly to a navigation tool for graphical user interfaces.

15 Until relatively recently, software-based documents have been primarily
viewed and manipulated on desktop or laptop computers with relatively large
displays, typically 640 x 480 pixels or larger. These displays are often large
enough to display a full page of standard size page or at least a significant portion
of the page. Hence, on-screen graphical menus and controls displayed in window
of an application did not greatly reduce the display area for the underlying
20 document. Computers also have peripheral devices such as a keyboard or a mouse
to control the display of content information. Thus, viewing and navigating
around a single-page or multi-page document have not posed much difficulty.

25 Due to increasing focus on compactness of electronic devices, however,
the displays especially in portable electronic devices are becoming smaller and
smaller. Popular electronic devices with smaller display area include electronic
organizers, PDA's (personal digital assistants), and graphical display-based
telephones. Also available today are communicators that facilitate various types
of communication such as voice, faxes, SMS (Short Messaging Services)
messages, e-mail, and Internet-related applications. These products can likewise
30 only contain a small display area.

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To enable users to navigate around a full page of content information, these devices typically provide hard-keys for arrows as shown in Fig. 1. The hard-keys, however, not only increase the size but also add to the cost of the devices. Also, hard-keys generally provide limited options for direction of movement, *e.g.*, vertical or horizontal. They generally do not provide the freedom to move in any direction.

Some displays of these devices also require a separate stylus having peripheral technology that requires transmission of electromagnetic pulses or light to the display. These devices often require additional controllers such as buttons on the body or the tip of the stylus for activation. Furthermore, these styli require a power source, either through wire or battery, and their compatibility is generally limited to a specific device.

As shown in Fig. 2, other devices substitute hard-keys with graphical on-screen arrows or scroll bars that are typically used in full-size computer displays. The on-screen scroll bars, however, occupy valuable screen real estate and compound the limitations of small displays. Similar to the hard-keys, the on-screen arrows also generally restrict the navigational movement to horizontal or vertical direction.

In other forms of on-screen GUIs, *e.g.*, pop-up menus, also take up valuable screen space, further reducing the available display area for content information. Additionally, on-screen pop-up menus typically provide available functions in multiple layers, thus requiring a user to move deeply into the hierarchy before reaching the desired function. This is time consuming and renders the GUI cumbersome and ineffective.

Therefore, it is desirable to provide navigation tools that allow small-size devices while maximizing the use of available screen real estate.

It is also desirable to provide tools to navigate within a document at any direction at varying speeds.

It is further desirable to provide navigation tools that can be activated without requiring specific electronic devices.

In addition, it is further desirable to provide an improved GUI that simplifies GUI by recognizing various characteristics of the touch input.

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SUMMARY OF THE INVENTION

Systems and methods consistent with the present invention provide graphical control tools for efficient navigation in display devices.

Specifically, a method consistent with this invention of controlling display of content information in a physical viewing area comprises several steps.

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Initially, the system displays the content information in the physical viewing area. The system also displays a representation of a control tool over the display of content information. Thereafter, the system receives a user input selecting the control tool, and controls the display of content information according to the user input.

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A system consistent for this invention for controlling display of content information in a physical viewing area includes displaying means, receiving means, and controlling means. The displaying means displays the content information in the physical viewing area, and displays a representation of a control tool over the display of content information. The receiving means receives a user input selecting the control tool. Thereafter, the controlling means controls the display of the content information according to the user input.

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BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate the invention and together with the description, serve to explain the principles of the invention.

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