Title: METHOD AND SYSTEM FOR ENTERING DATA INTO A WEB PAGE

Abstract: The preferred embodiment provides a mechanism for enabling a user to interact with forms or authentication pages in a simple and immediate way. The system is based on the leveraging of a wireless device (e.g., Bluetooth) from which information can be retrieved to fill in data over the Internet, through a plug-in. More particularly, the preferred embodiment establishes a secure connection with the external device and provides information on-demand to the browser.

Fig. 1
Declaration under Rule 4.17:

- of inventorship (Rule 4.17(iv))

Published:

- with international search report
METHOD AND SYSTEM FOR ENTERING DATA INTO A WEB PAGE

Technical Field

The invention relates to a method and system for entering data into a web page and, in particular, a method and system for entering data into a web page through an external wireless device.

Background

A number of Internet pages require fields to be completed providing, for example, a user name and password to access a service. On encountering such information, a user has a number of choices, including:

- enabling his browser to remember choices that will be prompted to the user when filling similar fields again;
- manually entering the information every time it is required; or
- using some products that are designed for filling out forms.

The 'remember fields' option of form-filling products has clear security risks. Furthermore, these products must reside on the computer that is actually used to surf the Internet. This clearly introduces its own security risk. Similarly, whilst the manual entry approach is the most secure and
reliable way of filling in required information; it is often frustrating and time-consuming.

US Patent Application No. US 2005053217 describes a method for remotely establishing a call from a first device to a second device, wherein information is retrieved from the first device regarding the second device, along with information associating the user with a device. The call is then transferred to a switch associated with the user's device, wherein the switch forwards the call to the second device.

International Patent Application No. WO1997US12629 describes a system for filling fields in Internet forms, which associates stored fill entities with field names and places the stored fill entities into the Internet form. In one embodiment, the association is automatic insofar as the names of the fill entities match the names on the form. In another embodiment, a display list is provided superimposed on the form, the display having selectable stored entity names. Entity names may be selected from the display list and caused to fill selected fields in the form. In another embodiment, a web browser is adapted to download database entities from a remote server, through an Internet connection, directly to a memory queue without immediate display. The stored entities are separately selectable from the memory queue for display and processing independent of the web browser or the Internet connection.

Whilst both of these Patent documents provide mechanisms for filling forms, the systems described therein, use applications running on the same computer or retrieve information from a server.

Summary of the invention

According to the invention there is provided a method of entering data into a web page by means of a data processing system, the method comprising the steps of: detecting the proximity of a wireless device; forming a communication link with the wireless device; retrieving data from the
wireless device; and populating fields in the web-page with the appropriate data.

The preferred embodiment makes it easier for a user to fill out forms, by avoiding the necessity for frustrating manual intervention. Furthermore, a browser plug-in in the preferred embodiment may be configured to accept authentication by a single sign-on, or optionally configured to request authentication for each URL. Similarly, the preferred embodiment moves a storing field feature from a shared browser to a personal system, thereby enhancing the privacy and the security of information. Finally, the preferred embodiment can be used at an Internet Point without the risk of leaving stored personal information therein.

The use of Bluetooth (Trademark) has the advantage of allowing the filling of a form when connection to an external server or database is not allowed (e.g. firewall, only use of intranet allowed, network problems etc). The fact that the retrieving-system (Bluetooth) (Trademark) is local, allows the user to be aware of the usage of his personal information. This contrasts with the situation in which information is held on a server, wherein it can be read by anyone authorised to access the server or whoever hacks the password for the server. Similarly, data retrieval can be configured for each URL with a different level of security (e.g. for some URLs a Bluetooth (Trademark) PIN is required and for other URLs a PIN is not required). Finally, the Bluetooth (Trademark) device can produce a log of data usage which can be easily accessed without any additional connection or applications. However, other forms of wireless connection could be used instead, e.g. employing, at least partially, RFID tags.

**Brief description of the drawings**

An embodiment of the invention is herein described, by way of example only, with reference to the accompanying figures, in which:
Figure 1 is a flow chart of the operation of the method of preferred embodiment; and
Figure 2 is a block diagram of a system on which the method of the preferred embodiment would operate.

Detailed description of the invention

The preferred embodiment provides a mechanism for enabling a user to interact with forms or authentication pages in a simple and immediate way. The system is based on the leveraging of a Bluetooth (Trademark) device from which information can be retrieved, to fill in data over the Internet, through a browser plug-in. More particularly, the preferred embodiment establishes a secure connection with the external device and provides information on demand to the browser.

Referring to Figure 1, the preferred embodiment is based on a plug-in that can be installed on top of a conventional Internet browser. The plug-in enhances the capability of the browser to enable it to communicate with an external device (e.g. phone, palm top or other computer) connected through, for example, a Bluetooth (Trademark) or a USB connection. In use, a user surfing over the Internet is presented with a form. The user is allowed to choose whether or not to use an external device for data retrieval and entry into the form. Should the user choose not to use the external device, the user may enter the data in accordance with their normal practice. However, should the user choose to use the external device for data entry, the plug-in detects the presence or proximity of the user's external device. In particular, the browser can simply check for the presence of any nearby devices. Alternatively, the browser may be configured to look for a specific device (identified, for example, by an IMEI code).

Having detected the external device, the browser is allowed to form a tentative connection with the external device. The user may configure the browser to require a
handshaking operation before the connection is completed. In this case, after forming the initial tentative connection, the external device will require a password from the user to allow the handshaking 22 operation. Once the connection is established between the browser and the external device, each time the browser presents the user with fields to be completed, the user can invoke a toolbar command to retrieve the appropriate information from the external device; and use the retrieved information to populate 26 the appropriate fields of the form. In order to increase the security of the data-entry operation, the user may configure the plug-in to require confirmation from the user for each data retrieval operation. The connection between the external device and the browser can be interrupted at any time by moving the external device out of range of the computer comprising the relevant browser. Alternatively, the connection can be manually terminated by the user.

A machine on which the preferred embodiment operates has a generic structure shown in Figure 2. More particularly, a generic computer of the system is denoted with 40. The computer 40 is formed by several units that are connected in parallel to a system bus 42. In detail, one or more microprocessors 44 control operation of the computer 40; a RAM 46 is directly used as a working memory by the microprocessors 44, and a ROM 48 stores basic code for a bootstrap of the computer 40. Peripheral units are clustered around a local bus 50 (by means of respective interfaces). Particularly, a mass memory consists of a hard-disk 52 and a drive 54 for reading CD-ROMs 56. Moreover, the computer 40 includes input devices 58 (for example, a keyboard and a mouse), and output devices 60 (for example, a monitor and a printer). A Network Interface Card (NIC) 62 is used to connect the computer 40 to the network. A bridge unit 64 interfaces the system bus 42 with the local bus 50. Each microprocessor 44 and the bridge unit 64 can operate as master agents requesting an access to the system bus 42 for transmitting information. An arbiter 66 manages
the granting of the access with mutual exclusion to the system bus 42.

Modifications and alterations may be made to the above without departing from the scope of the invention.
1. A method of entering data into a web page by means of a data processing system, the method comprising the steps of:
   - detecting (18) the proximity of a wireless device;
   - forming (20) a communication link between the data processing system and the wireless device;
   - retrieving (24) data from the wireless device; and
   - populating (26) fields in the web-page with the retrieved data.

2. Method as claimed in Claim 1, wherein the method comprises the step of allowing a first user to specify a password for the communications link; and the step of forming the communication link comprises the steps of:
   - requesting a user of the wireless device for the password; and
   - completing (22) the communication link, in the event that the password provided by the user of the wireless device matches that provided by the first user.

3. Method as claimed in Claim 1 or Claim 2, wherein the step of detecting the proximity of a wireless device comprises the step of searching for a specified wireless device.

4. Method as claimed in Claim 3, wherein the step of searching for a specified wireless device comprises the step of searching for a device identified by a specific IMEI code.

5. Method as claimed in any one of the preceding claims, wherein the step of forming the communication link comprises the step of forming the communication link through a Bluetooth protocol.

6. Method as claimed in any one of Claims 1 to 4, wherein the step of forming the communication link comprises the step
of forming the communication link through a USB connection.

7. A computer program for performing the method of any preceding claim when the computer program is executed on a data processing system.

8. A computer program product including computer readable means embodying the program of Claim 7.

9. A system for entering data into a web page comprising means adapted to carry the steps of the method of any Claim 1 to 6.
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Install plug-in 10

User presented with a form 12

User chooses to use external device for data entry? 14

Y

Detect external device 18

form connection with external device 20

Handshake 22

Retrieved data from external device 24

Populate fields 26

N

Normal Data entry 16

Fig. 1
### A. CLASSIFICATION OF SUBJECT MATTER

**INV.** G06F21/20

According to International Patent Classification (IPC) or to both national classification and IPC:

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols):

G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched:

Electronic data base consulted during the international search (name of data base and, where practical, search terms used):

- EPO-Internal, WPI Data

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<td>X</td>
<td>US 2002/147912 A1 (SHMUELI SHIMON [US] ET AL) 10 October 2002 (2002-10-10) paragraphs [0026], [0031], [0043], [0052], [0062]; figures 2a, 3a, 3b</td>
<td>1, 2, 5-9</td>
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Further documents are listed in the continuation of Box C.

See patent family annex.

- 'A' document defining the general state of the art which is not considered to be of particular relevance
- 'E' earlier document but published on or after the international filing date
- 'L' document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- 'O' document referring to an oral disclosure, use, exhibition or other means
- 'P' document published prior to the international filing date but later than the priority date claimed
- 'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- 'X' document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- 'Y' document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- 'U' document member of the same patent family

**Date of the actual completion of the international search**

27 January 2009

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04/02/2009

**Name and mailing address of the ISA/office**

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**Authorized officer**

Widera, Sabine
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