12-17-01

A

Docket No. 3125-4002US1

Express Mail No. EL606933364US

27123

PATENT TRADEMARK OFFICE

JC698 U.S. PTO 11/01/01

JC832 U.S. PTO 10/015729 11/01/01

↑AFFIX CUSTOMER NO. LABEL ABOVE ↑

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY APPLICATION AND FEE TRANSMITTAL §(1.53(b))

Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Inventor(s) names and addresses: Keith R. McNally, San Diego, CA; William H. Roof, San Diego, CA; Richard Bergfeld, Chatsworth, CA

For: INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

Enclosed Are:

27 page(s) of specification
1 page(s) of Abstract
20 page(s) of claims
6 sheets (Figs. 1-7) of ☒ Formal ☐ Informal drawings
6 page(s) of Declaration and Power of Attorney

- ☐ Unsigned
- ☐ Newly Executed
- ☒ Copy from prior application
- ☐ Deletion of inventors including Signed Statement under 37 C.F.R. §1.63(d)(2)

660999 v1

☒ **REQUEST AND CERTIFICATION UNDER 35 U.S.C. §122(b)(2)(B)(i) (form PTO/SB/35)**

As indicated on the attached Request and Certification, Applicant(s) certify that the invention disclosed in the attached application HAS NOT and WILL NOT be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing. Applicant(s) therefore request(s) that the attached application NOT be published under 35 U.S.C. §122(b).

☒ Incorporation by Reference:

☒ The entire disclosure of the prior application, from which a copy of the combined Declaration and Power of Attorney is supplied herein, is considered as being part of the disclosure of the accompanying application and is incorporated herein by reference.

☐ Deletion of Inventors (37 C.F.R. §1.63(d) and §1.33(b)

Signed statement attached deleting inventor(s) named in the prior application serial no. ____, filed _____.

☐ Microfiche Computer Program (Appendix)

☐ page(s) of Sequence Listing

☐ computer readable disk containing Sequence Listing

☐ Statement under 37 C.F.R. §1.821(f) that computer and paper copies of the Sequence Listing are the same

☒ Assignment Papers (assignment cover sheet and assignment documents)

☐ A check in the amount of $40.00 for recording the Assignment

☐ Charge the Assignment Recordation Fee to Deposit Account No. 13-4500, Order No. _____.

☒ Assignment Papers filed in the parent application Serial No. 09/400,413

☐ Certification of chain of title pursuant to 37 C.F.R. §3.73(b)

☐ Priority is claimed under 35 U.S.C. §119 for:
Application No(s). _____ , filed _____, in _____ (country).

☐ Certified Copy of Priority Document(s) [_____]

☐ filed herewith

☐ filed in application Serial No. _____, filed _____.

☐ English translation document(s) [_____]

☐ filed herewith

☐ filed in application Serial No. _____, filed _____.

☐ Priority is claimed under 35 U.S.C. §119(e) for:
Provisional Application No. _____, filed _____.

☐ Information Disclosure Statement

- ☐ Copy of [_____] cited references
- ☐ PTO Form-1449
- ☐ References cited in parent application Serial No. _____, filed _____.

☐ Related Case Statement under 37 C.F.R. §1.98(a)(2)(iii)

- ☐ A copy of related pending U.S. Application(s) Serial No(s): _____, filed _____, respectively, is attached hereto.
- ☐ A copy of related pending U.S. Application(s) entitled, _____, filed _____ to inventor(s) _____, respectively, is attached hereto.
- ☐ A copy of each related application(s) was submitted in parent application serial no. ____, filed _____.

☒ Preliminary Amendment

☒ Return receipt postcard (MPEP 503)

☒ This is a ☒ continuation ☐ divisional ☐ continuation-in-part of prior application serial no. 09/400,413, filed September 21, 1999, to which priority under 35 U.S.C. §120 is claimed.

- ☐ Cancel in this application original claims _____ of the parent application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- ☒ A Preliminary Amendment is enclosed. (Claims added by this Amendment have been properly numbered consecutively beginning with the number following the highest numbered original claim in the prior application).

☒ The status of the parent application is as follows:

- ☐ A Petition for Extension of Time and a Fee therefor has been or is being filed in the parent application to extend the term for action in the parent application until _____.
- ☐ A copy of the Petition for Extension of Time in the co-pending parent application is attached.
- ☒ No Petition for Extension of Time and Fee therefor are necessary in the co-pending parent application.

☐ Please abandon the parent application at a time while the parent application is pending or at a time when the petition for extension of time in that application is granted and while this application is pending has been granted a filing date, so as to make this application co-pending.

☐ Transfer the drawing(s) from the parent application to this application

☐ Amend the specification by inserting before the first line the sentence:
This is ☐ continuation ☐ divisional ☐ continuation-in-part of co-pending application Serial No. _____, filed _____.

I. CALCULATION OF APPLICATION FEE				
	Number Filed	Number Extra	Rate	Basic Fee $740.00/370.00
Total Claims*	102- 20 =	82x	$18.00/ $9.00	$ 738.00
Independent Claims	13- 3 =	10x	$84.00/ $42.00	$ 420.00
☒ Multiple Dependent Claims		If marked, add fee of $280.00 ($140.00)		$ 140.00
* Reflects total number of claims for fee purposes, with multiple dependent claims being counted according to 37 C.F.R. §1.75(c)			TOTAL:	$ 1668.00

☒ Small entity status is or has been claimed. Reduced fees under 37 C.F.R. §1.9 (f) paid herewith $1668.00.

☒ A check in the amount of $1668.00 in payment of the application filing fees is attached.

☐ Charge fee to Deposit Account No. 13-4500, Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

☒ The Commissioner is hereby authorized to charge any additional fees which may be required for filing this application pursuant to 37 CFR §1.16, **including all extension of time fees pursuant to 37 C.F.R. § 1.17 for maintaining copendency** with the parent application, or credit any overpayment to Deposit Account No. 13-4500, Order No. 3125-4002US1. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

Dated: November 1, 2001

By: _____
John W. Osborne
Registration No. 36,231

Correspondence Address:
MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, NY 10154-0053
(212) 758-4800 Telephone
(212) 751-6849 Facsimile

Docket No. 3125-4002US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): McNally et al.

Group Art Unit: 2173 (parent case)

Serial No.: Continuation of 09/400,413

Examiner: Cao Nguyen (parent case)

Filed: Herewith

For: INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

EXPRESS MAIL CERTIFICATE

Express Mail Label No.: EL606933364US

Date of Deposit: November 1, 2001

I hereby certify that the following attached paper(s) and/or fee

1. Utility Application and Fee Transmittal Form;
2. Combined Declaration and POA;
3. Preliminary Amendment;
4. Check in the amount of $1,668.00;
5. Patent Application (Specs. 26 pgs., Claims 20 pgs. Abstract 1 pg.)
6. Formal Drawings (6 sheets - Figs. 1-7)
5. Return Receipt Postcard.

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to BOX CPA, Commissioner for Patents, Washington, D.C. 20231.

Jesus Raul Remedios

(Typed or printed name of person mailing papers(s) and/or fee)

(Signature of person mailing paper(s) and/or fee)

Correspondence Address:

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661254 v1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: McNally et al. **GROUP ART UNIT:**2173 (parent case)

SERIAL NO.: Continuation of 09/400,413 **EXAMINER:** Cao Nguyen (parent case)

FILED: HEREWITH

FOR: INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

COMMISSIONER FOR PATENTS
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Responsive to the Final Rejection in the Parent Case dated May 22, 2001, Applicants respectfully request reconsideration in view of the amendment and following remarks. No fees are believed due. However, in the event that any fees are necessitated by this response, the Commissioner is hereby authorized to charge our Deposit Account 13-4500, Order No. 3125-4002US1.

IN THE CLAIMS

Please add new claim 93 as follows.

93. (new) The information management and synchronous communication system of claim 45 wherein a non-simultaneous protocol is used to acknowledge receipt of the data at the valet parking base station.

REMARKS

I. Status of the Claims

Claims 1-92 are pending in this application, with claim 93 being added by this Amendment.

Claims identical to claims 1-19, 20-28, and 35-39 were rejected in the parent case under 35 U.S.C. 102(e) as being anticipated by Cupps et al. In the parent case these

claims were identified by numbers 1-19, 31-39, and 50-54 respectively. This Amendment will refer to the claims by their new numbers.

Claims identical to claims 29-34 and 40-41 were rejected in the parent case under 35 U.S.C. 103(a) as being unpatentable over Cupps in view of Behr. In the parent case these claims were identified by numbers 44-49 and 56-57 respectively. This Amendment will refer to the claims by their new numbers.

Of the pending claims for which identical claims were rejected in the parent application, claims 1, 12, 20, 29, 32, and 33 are independent.

II. Rejections Under 35 U.S.C. 102(e)

In the parent application the Examiner rejected claims identical to independent claims 1, 12, and 20 under 35 U.S.C. 102(e) as being anticipated by Cupps et al.

With regard to claims identical to independent claims 1, 12, and 20 of the present application, the Examiner argues that at lines 35-65 of column 9 and in figs. 2 and 3a-3f, Cupps discloses information synchronization involving a second or modified menu. However Applicants respectfully disagree.

The first section cited by the examiner, column 9 lines 35-65, fails to disclose information synchronization involving a second or modified menu, nor any other sort of information synchronization. This section instead discloses a customer providing to an online ordering machine registration information, location information, time of day information, and an indication of the type of service sought (e.g., takeout or delivery).

The second section cited by the examiner, Fig. 2, is a system overview showing an online ordering machine component, a client machine component connected to the online ordering machine via a network, and telephone and fax components connected to the online ordering machine via standard telephone lines. Also shown are various elements of the online ordering machine and the client machine. However, nowhere in the figure or its corresponding disclosure is there any indication of synchronization involving a second or

modified menu. More generally, there is no disclosure of information synchronization occurring between any components of the system, nor is there disclosure of any other sort of information synchronization.

The third section cited by the examiner, Figs. 3a-3f, fails to disclose synchronization involving a second or modified menu and instead discloses the "schema" – that is the organization and structure – of the order database 128 (see Cupps, Col. 5 Ln. 21). Nowhere in the figures or in the corresponding disclosure is there even any indication that the order database is involved in any sort of information synchronization. In fact, there is no disclosure of any sort of information synchronization in this section.

Furthermore, the remainder of the Cupps disclosure also fails to disclose synchronization involving a second or modified menu, nor any other sort of information synchronization.

Accordingly, Cupps fails to disclose at least the aspect of independent claim 1 wherein:

> "... data comprising the second menu is synchronized between the data storage device connected to the central processing unit and at least one other computing device ..."
> (emphasis added)

Similarly, Cupps also fails to disclose at least the aspect of independent claim 12 wherein:

> " ... data comprising the modified menu is synchronized between the data storage device and at least one other computing device..."
> (emphasis added)

Furthermore, Cupps fails to disclose at least the aspect of independent claim 26 wherein:

> " ... synchronizing the data comprising the second menu between the storage device and at least one other data storage medium, wherein the other data storage medium is connected to or is part of a different computing device..."

(emphasis added)

The disclosure of the present invention explains that according to the claimed synchronization there is, for example:

> " … fast synchronization between a central database and multiple handheld devices, synchronization and communication between a Web server and multiple handheld devices, a well-defined API that enables third parties such as POS companies, affinity program companies and internet content providers to fully integrate with computerized hospitality applications, real-time communication over the internet with direct connections or regular modem dialup connections and support for batch processing that can be done periodically throughout the day to keep multiple sites in synch with the central database."
> (see disclosure, p. 7 ln. 21 – p. 8 ln. 4; emphasis added)

As another example, the disclosure of the present invention notes that according to such synchronization:

> " … a reservation made online can be automatically communicated to the backoffice server and then synchronized with all the wireless handheld devices wirelessly. Similarly, changes made on any of the wireless handheld devices are reflected instantaneously on the backoffice server Web pages and the other handheld devices."
> (see disclosure, p. 8 ln. 13-16; emphasis added)

In light of the above, Applicants submit that independent claims 1, 12, and 20 are in condition for allowance. As claims 2-11, 13-19, 21-28, 35-39, 49-68, and 84-92 depend therefrom, these claims, for at least the above-identified reasons, are also thought to be allowable.

III. Rejections Under 35 U.S.C. 103(a)

In the parent application the Examiner rejected claims identical to independent claims 29, 32, and 33 under 35 U.S.C. 102(e) as being unpatentable over Cupps in view of Behr.

As explained above, Cupps fails to disclose any sort of information synchronization. Furthermore, Applicants find no disclosure in Behr of any sort of information synchronization, nor does the Examiner provide any reference to such disclosure in Behr .

Applicants therefore submit that Cups and Behr, alone or in combination, fail to disclose, teach, or suggest at least the aspect of independent claim 29 wherein:

> "... applications or data are synchronized wirelessly between the central database and at least one wireless handheld computing device and wherein the applications program interface and communications control module establish a seamless link between the data in the central database and the data on the wireless handheld computing device.."
> (emphasis added)

Similarly, Cups and Behr, alone or in combination, fail to disclose, teach, or suggest at least the aspect of independent claim 32 wherein:

> " ... hospitality applications or data are synchronized between the central database, at least one wireless computing device and at least one wireless paging or beeper device and wherein messaging to the wireless paging or beeper device is enabled directly from the operator interface of the wireless computing device."
> (emphasis added)

Furthermore, Cups and Behr, alone or in combination, fail to disclose, teach, or suggest at least the aspect of independent claim 33 wherein:

> " ... applications or data are synchronized between the central database and the second storage medium and wherein the applications program interface and communications control module establish a seamless link between the data in

the central database and the data on the second storage medium."
(emphasis added)

The Examiner also states:

"Behr teaches wireless handheld computing device on which hospitality application (see col. 14, lines 1-57)."

Applicants respectfully disagree. Behr discloses "a method of providing route guidance information and other information from a base unit to a mobile unit in response to a request from the mobile unit" (see Behr, Col. 4 Ln. 28-31). Behr explains that the mobile unit sends the request for route guidance as a "query message 120" including a "destination field 144" and a "destination type field 146", and, for example , that the "destination type field 146 may be 'restaurant', and the destination field 144 may be 'McDonald's'" (see Behr, Col. 14 Ln. 37-44). Behr also discloses that other specifiable destinations include "airport[s]" and "museum[s]" (see Behr, Col. 14 Ln. 42).

However, Applicants submit that simply stating that a mobile unit may request from a navigation system directions to a restaurant does not constitute disclosure of a hospitality software application. As known in the art, a hospitality software application is, for example, a piece of software used to provide operational solutions in hospitality industries such as restaurants and hotels concerning, for example, food ordering, menus, wait-lists and reservations. Accordingly, Applicants submit that Behr fails to teach a "wireless handheld computing device on which hospitality application" as suggested by the Examiner.

In light of at least the above, Applicants submit that independent claims 29, 32, and 33 are in condition for allowance. As claims 30, 31, 34, 40-48, and 93 depend therefrom, these claims, for at least the above-identified reasons, are also thought to be allowable.

IV. Conclusion and Authorization

Applicants believe that all pending claims are allowable over the cited art.

The Commissioner is hereby authorized to charge any additional fees which may be required for this amendment, or credit any overpayment to Deposit Account No. 13-4500, Order No. 3125-4002. **A DUPLICATE OF THIS DOCUMENT IS ATTACHED.**

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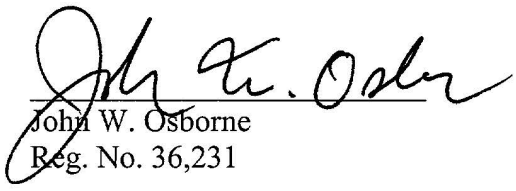

John W. Osborne
Reg. No. 36,231

November 1, 2001
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659742 v1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: McNally et al. **GROUP ART UNIT:**2173 (parent case)

SERIAL NO.: Continuation of 09/400,413 **EXAMINER:** Cao Nguyen (parent case)

FILED: HEREWITH

FOR: INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

COMMISSIONER FOR PATENTS
Washington, D.C. 20231

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> (emphasis added)

Furthermore, Cups and Behr, alone or in combination, fail to disclose, teach, or suggest at least the aspect of independent claim 33 wherein:

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The Examiner also states:

"Behr teaches wireless handheld computing device on which hospitality application (see col. 14, lines 1-57)."

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However, Applicants submit that simply stating that a mobile unit may request from a navigation system directions to a restaurant does not constitute disclosure of a hospitality software application. As known in the art, a hospitality software application is, for example, a piece of software used to provide operational solutions in hospitality industries such as restaurants and hotels concerning, for example, food ordering, menus, wait-lists and reservations. Accordingly, Applicants submit that Behr fails to teach a "wireless handheld computing device on which hospitality application" as suggested by the Examiner.

In light of at least the above, Applicants submit that independent claims 29, 32, and 33 are in condition for allowance. As claims 30, 31, 34, 40-48, and 93 depend therefrom, these claims, for at least the above-identified reasons, are also thought to be allowable.

Petitioners' Exhibit 1007, Page 18

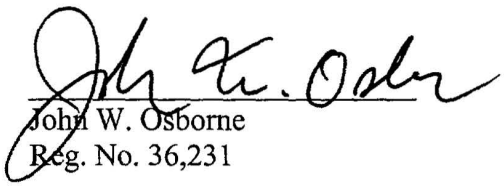
IV. Conclusion and Authorization

Applicants believe that all pending claims are allowable over the cited art.

The Commissioner is hereby authorized to charge any additional fees which may be required for this amendment, or credit any overpayment to Deposit Account No. 13-4500, Order No. 3125-4002. **A DUPLICATE OF THIS DOCUMENT IS ATTACHED.**

In the event that an extension of time is required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 13-4500, Order No. 3125-4002US1. **A DUPLICATE OF THIS DOCUMENT IS ATTACHED.**

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.



John W. Osborne
Reg. No. 36,231

November 1, 2001
MORGAN & FINNEGAN, L.L.P.
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New York, NY 10154
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659742 v1

UNITED STATES PATENT APPLICATION

For:

INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

Inventors:

Keith R. McNALLY

WILLIAM H. ROOF

RICHARD BERGFELD

Express Mail Label No. EL606933364US

UNITED STATES PATENT APPLICATION

OF: KEITH R. McNALLY
WILLIAM H. ROOF
RICHARD BERGFELD

FOR: INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

The present application is a continuation of application Serial No. 09/400,413, filed September 21, 1999. The contents of application Serial No. 09/400,413 are incorporated herein by reference.

FIELD OF THE INVENTION

This invention relates to an information management and synchronous communications system and method for generation of computerized menus for restaurants and other applications with specialized display and synchronous communications requirements related to, for example, the use of equipment or software with non-PC-standard graphical formats, display sizes and/or applications for use in remote data entry, information management and synchronous communication between host computer, digital input device or remote pager via standard hardwired connection, the internet, a wireless link, smart phone or the like.

BACKGROUND OF THE INVENTION

While computers have dramatically altered many aspects of modern life, pen and paper have prevailed in the hospitality industry, e.g., for restaurant ordering, reservations and wait-list management, because of their simplicity, ease of training and operational speed. For example, ordering prepared foods has historically been done verbally, either directly to a waiter

or over the telephone, whereupon the placed order is recorded on paper by the recipient or instantly filled.

Although not previously adapted for wide-scale use in the hospitality industry, various forms of digital wireless communication devices are in common use, e.g., digital wireless messengers and pagers. Also in common use are portable laptop and handheld devices. However, user-friendly information management and communication capability not requiring extensive computer expertise has not heretofore been available for use in everyday life such as for restaurant ordering, reservations and wait-list management. Hundreds of millions of dollars have been spent on personal digital assistant ("PDA") development seeking to produce a small, light-weight and inexpensive device that could be adapted to such uses; yet none have yielded a satisfactory solution.

One of the inherent shortcomings of PDA type devices is that, as they strive for small size, low weight and low cost, they must compromise the size and clarity of the operator display medium interface itself, which in most cases is one of a variety of LCD (liquid crystal display) type devices. As the size of the display shrinks, the amount of information that may be displayed at any one point or time is commensurately decreased, typically requiring multiple screens and displays to display information to the operator. This reduces the overall utility of the device. Additionally, the smaller display and keyboard results in a non-optimal operator interface, which slows down operation and is thus unacceptable for the time criticality of ordering, reservation and wait-list management and other similar applications. This necessitates many design compromises which in the aggregate have resulted in limited acceptance of PDA type devices in the restaurant and hospitality fields.

Many of the negatives prevalent in earlier devices have been eliminated, but, to date, there is still no integrated solution to the ordering/waitlist/reservation problem discussed above. With the advent of the Palm® and other handheld wireless devices, however, the efforts to make such devices ubiquitous have begun to bear fruit at least in some areas, e.g., personal calendars. However, substantial use of such devices in the restaurant and hospitality context has not occurred to date. As discussed above, at least one of the reasons PDAs have not been quickly assimilated into the restaurant and hospitality industries is that their small display sizes are not readily amenable to display of menus as they are commonly printed on paper or displayed on, e.g., large, color desktop computer screens. Another reason is that software for fully realizing the potential for wireless handheld computing devices has not previously been available. Such features would include fast and automatic synchronization between a central database and multiple handheld devices, synchronization and communication between a World Wide Web ("Web") server and multiple handheld devices, a well-defined application program interface ("API") that enables third parties such as point of sale ("POS") companies, affinity program companies and internet content providers to fully integrate with computerized hospitality applications, real-time communication over the internet with direct connections or regular modem dialup connections and support for batch processing that can be done periodically throughout the day to keep multiple sites in synch with the central database. A single point of entry for all hospitality applications to communicate with one another wirelessly has also previously been unavailable. Such a single point of entry would work to keep all wireless handheld devices and linked Web sites in synch with the backoffice server (central database) so that the different components are in equilibrium at any given time and an overall consistency is achieved. For example, a reservation made online would be automatically communicated to the

backoffice server and then synchronized with all the wireless handheld devices wirelessly. Similarly, changes made on any of the wireless handheld devices would be reflected instantaneously on the backoffice server, Web pages and the other handheld devices.

For the foregoing reasons, paper-based ordering, waitlist and reservations management have persisted in the face of widespread computerization in practically all areas of commerce. At most, computerization of these functions has been largely limited to fixed computer solutions, i.e., desktop or mainframe, because of the problems heretofore faced in configuring wireless handheld devices and maintaining database synchronization for such applications. Specifically, the unavailability of any simple technique for creating restaurant menus and the like for use in a limited display area wireless handheld device or that is compatible with ordering over the internet has prevented widespread adoption of computerization in the hospitality industry. Without a viable solution for this problem, organizations have not made the efforts or investments to establish automated interfaces to handheld and Web site menus and ordering options.

A principal object of the present invention is to provide an improved information management and synchronous communications system and method which facilitates user-friendly and efficient generation of computerized menus for restaurants and other applications that utilize equipment with non-PC-standard graphical formats, display sizes and/or applications.

A further object of the present invention is to provide an improved information management and synchronous communications system and method which provides for entry, management and communication of information from the operator as well as to and from another computer, Web page menu, remote digital device using a standard hardwired connection, the internet or a wireless link.

A further object of the present invention is to provide an improved information management and synchronous communications system which is small, affordable and lightweight yet incorporates a user-friendly operator interface and displays menus in a readily comprehensible format.

A further object of the present invention is to provide a synchronous information management and communications system which enables automatic updating of both wireless and internet menu systems when a new menu item is added, modified or deleted from any element of the system.

SUMMARY OF THE INVENTION

The foregoing and other objects of the present invention are provided by a synchronous information management and communications system and method optimized for simplicity of operation which incorporates menu generation for creation of menus to be used with wireless remote handheld computer and PDA devices, the internet or any application where simple and efficient generation of menus is appropriate. The menu generation approach of the present invention includes a desktop software application that enables the rapid creation and building of a menu and provides a means to instantly download the menu configuration onto, e.g., a handheld device or Web page and to seamlessly interface with standard point of sale ("POS") systems to enable automatic database updates and communication exchanges when a change or input occurs in any of the other system elements. To solve the above and other related problems, an information management and communications system is provided which results in a dramatic reduction in the amount of time, and hence cost, to generate and maintain computerized menus for, e.g., restaurants and other related applications that utilize non-PC-standard graphical formats, display sizes or applications.

The menu generation approach of the present invention has many advantages over previous approaches in solving the problem of converting paper-based menus or Windows® PC-based menu screens to small PDA-sized displays and Web pages. In one embodiment, the present invention is a software tool for building a menu, optimizing the process of how the menu can be downloaded to either a handheld device or Web page, and making manual or automatic modifications to the menu after initial creation.

The use of wireless handheld devices in the restaurant and hospitality industry is becoming increasingly pervasive as restaurant owners and managers become more aware of the benefits. With the proper wireless handheld system in place, restaurants can experience increased table turns from improved server productivity and shorter order taking and check paying times. Restaurants and POS companies seeking to provide a wireless handheld interface to their desktop-based POS systems or a Web page equivalent face several challenges. These challenges include building a menu using their existing database and transferring the menu onto handheld devices or Web pages that will interface with servers wirelessly or to restaurants/customers over the internet. The menu generation approach of the present invention is the first coherent solution available to accomplish these objectives easily and allows one development effort to produce both the handheld and Web page formats, link them with the existing POS systems, and thus provides a way to turn a complicated, time-consuming task into a simple process.

The information management and synchronous communications system of the present invention features include fast synchronization between a central database and multiple handheld devices, synchronization and communication between a Web server and multiple handheld devices, a well-defined API that enables third parties such as POS companies, affinity

program companies and internet content providers to fully integrate with computerized hospitality applications, real-time communication over the internet with direct connections or regular modem dialup connections and support for batch processing that can be done periodically throughout the day to keep multiple sites in synch with the central database.

The communication module also provides a single point of entry for all hospitality applications, e.g., reservations, frequent customer ticketing, wait lists, etc. to communicate with one another wirelessly and over the Web. This communication module is a layer that sits on top of any communication protocol and acts as an interface between hospitality applications and the communication protocol and can be easily updated to work with a new communication protocol without modifying the core hospitality applications. A single point of entry works to keep all wireless handheld devices and linked web sites in synch with the backoffice server applications so that the different components are in equilibrium at any given time and an overall consistency is achieved. For example, a reservation made online can be automatically communicated to the backoffice server and then synchronized with all the wireless handheld devices wirelessly. Similarly, changes made on any of the wireless handheld devices are reflected instantaneously on the backoffice server Web pages and the other handheld devices.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing features and advantages of the present invention can be appreciated more fully from the following description, with references to the accompanying drawings in which:

FIG. 1 is a schematic representation of a window displayed on a computer display screen which shows a hierarchical tree menu, modifier window and sub-modifier window in conformity with a preferred embodiment of the present invention.

FIG. 2 is a schematic representation of a modifier dialog box in conformity with a preferred embodiment of the present invention.

FIG. 3 is a schematic representation of a menu category dialog box in conformity with a preferred embodiment of the present invention.

FIG. 4 is a schematic representation of a menu item dialog box in conformity with a preferred embodiment of the present invention.

FIG. 5 is a schematic representation of a display customization dialog box in conformity with a preferred embodiment of the present invention.

FIG. 6 is a schematic representation of a communications control window in conformity with a preferred embodiment of the present invention.

FIG. 7 is a schematic representation of a point of sale interface on a wireless handheld device for use in displaying page menus created in conformity with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Most personal computers today run under an operating system that provides a graphical user interface ("GUI") for accessing user applications. A GUI is used in the preferred embodiment of the present invention. Through an interface of windows, pull-down menus, and toolbars, GUI operating systems have simplified PCs and have rendered computer technology more user friendly by eliminating the need to memorize keyboard entry sequences. In addition, GUIs allow users to manipulate their data as they would physical entities. For example, a window can represent a file and the contents of the window can represent the records of the file. The window can be opened, closed, or set aside on a desktop as if it were an actual object. The records of the file can be created, deleted, modified and arranged in a drag-and-drop fashion as if

they also were physical objects. The most common GUI operating systems that provide this "object-oriented" environment for personal computers are Microsoft Windows® systems, including Windows CE® for handheld wireless devices and the like. Generally, a particular application program presents information to a user through a window of a GUI by drawing images, graphics or text within the window region. The user, in turn, communicates with the application by "pointing" at graphical objects in the window with a pointer that is controlled by a hand-operated pointing device, such as a mouse, or by pressing keys on a keyboard.

The use of menus is conventional in GUIs for software applications. Menus are typically utilized to provide end users of applications with available choices or processing options while using the applications. For example, in a typical desktop or interactive application, selection of a "file" from a menu bar may cause display of a context menu which provides "file" options. File options can have additional subordinate or child options associated with them. If a file option having subordinate options is selected, the child options are displayed in context in a child menu or submenu proximate to the selected parent option. One or more of the child options provided in the child menu may have further subordinate options. Thus, such a menu system comprises cascading sets of menus which are displayable in context to show the parent/child relationships between options of the context menu. A menu system of this type is incorporated into the preferred embodiment of the invention.

The preferred embodiment of the present invention uses typical hardware elements in the form of a computer workstation, operating system and application software elements which configure the hardware elements for operation in accordance with the present invention. A typical workstation platform includes hardware such as a central processing unit ("CPU"), e.g., a Pentium® microprocessor, RAM, ROM, hard drive storage in which are stored

various system and application programs and data used within the workstation, modem, display screen, keyboard, mouse and optional removable storage devices such as floppy drive or a CD ROM drive. The workstation hardware is configured by software including an operating system, e.g., Windows® 95, 98, NT or CE, networking software (including internet browsing software) and application software components. The preferred embodiment also encompasses a typical file server platform including hardware such as a CPU, e.g., Pentium® microprocessor, RAM, ROM, hard drive, modem, and optional removable storage devices, e.g., floppy or CD ROM drive. The server hardware is configured by software including an operating system, e.g., Windows® 95, 98, NT or CE, networking software (including Web server software) and database software.

A computer workstation for use in the preferred embodiment also includes a GUI. As is conventional, the GUI is configured to present a graphical display on the display screen arranged to resemble a single desktop. Execution of an application program involves one or more user interface objects represented by windows and icons. Typically, there may be several windows and icons simultaneously present on the desktop and displaying information that is generated by different applications.

The window environment is generally part of the operating system software that includes a collection of utility programs for controlling the operation of the computer system. The computer system, in turn, interacts with application programs to provide higher level functionality, including a direct interface with the user. Specifically, the application programs make use of operating system functions by issuing task commands to the operating system which then performs the requested task. For example, an application program may request that the operating system display certain information on a window for presentation to the user.

An aspect of the preferred embodiment of the information management and communications system of the invention is shown in FIG. 1. FIG. 1 shows an example of the GUI provided by the operating system of the preferred embodiment of the present invention. With reference to FIG. 1, the preferred embodiment includes an intuitive GUI 1 from which to build a menu on a desktop or other computer. A hierarchical tree structure 2 is used to show the different relationships between the menu categories 3 (e.g., soups, salads, appetizers, entrees, deserts, etc.), menu items 4 (e.g., green salad, chicken caesar salad, etc.), menu modifiers 5 (e.g., dressing, meat temperature, condiments, etc.) and menu sub-modifiers 6 (e.g., Italian, French, ranch, bleu cheese, etc.).

The procedure followed in configuring a menu on the desktop PC and then downloading the menu configuration onto the POS interface on the handheld device in conformance with the preferred embodiment is as follows.

The menu configuration application is launched by clicking on the appropriate icon on the desktop display screen. FIG. 1 will then be displayed. There are three windows on the screen shown in FIG. 1. The left window is the menu tree 7, also called the tree view. The top right window is the Modifiers window 8 and the bottom right window is the Sub-Modifiers window 9. The Sub-Modifiers window lists the sub-modifiers that correspond to the modifier that is selected. The views on the right are referred to as list views. There are several ways of invoking a command, including using the menu options; using the context menu (right mouse click); using the keyboard or using the toolbar icons. For example, if it is desired to add a category to the menu, the following four options are available: (1) clicking on Edit, Add Category; (2) right mouse clicking on Menu, then clicking on Add Category; (3) highlighting Menu, then typing Ctrl + T or (4) clicking on the Add Category icon on the toolbar. To add an

item to a category, the following options are available: (1) highlighting the category to which it is desired to add an item and then clicking on Edit > Add Item; (2) right mouse clicking on the desired category and then clicking on Add Item; (3) highlighting the desired category, then typing Ctrl + N or (4) clicking on the Add icon on the toolbar.

When building a menu, it should be kept in mind that the menu items are stored using a tree metaphor similar to how files are stored on a PC with folders and subfolders. The menu structure is similar to the Windows® File Explorer in the way the items are organized hierarchically. Below is an example of how an item may be configured:

Menu
>> Entrees
>> Red Meat
>> NY Strip
>> Vegetables
>> Tomato
>> Lettuce
Meat Temperature
>> Medium Rare

In the above example, Menu is the root. Entrees is a menu category. Red Meat is an Entree category. NY Strip is a modifier. Vegetable is a modifier. Meat Temperature is a modifier. Medium Rare is a sub-modifier of Meat Temperature.

The steps taken in building a menu are as follows:

1. Add Modifiers;
2. Add Sub-Modifiers and link them to the Modifiers;
3. Create Menu categories;
4. Add menu items to the categories;
5. Assign Modifiers to the menu items;
6. Preview the menu on the POS emulator on the desktop PC;
7. Download the menu database to the handheld device.

To add modifiers, a user clicks on the inside of the Modifiers window, then (1) clicks on Edit>Add Modifier; (2) Presses Ctrl + N; (3) right mouse clicks in the Modifiers window, then clicks on Add Modifiers or (4) clicks on the Add icon from the toolbar. If a menu is being built from scratch, the procedure is to enter the Long Name, Short Name, Code and Price in the Modifier dialog box 10 shown in FIG. 2. The Long Name is the full descriptive name of the item. The Short Name is the abbreviated name that will be displayed on the handheld device. The Code is the numeric or alphanumeric code for the item. If there is an existing database, the existing database can be browsed and menu items retrieved from the database. Clicking on the Browse button will bring up the existing database of menu items. The item to be added is then selected and "OK" is clicked. The fields will then be filled with the information from the database. Clicking on OK again will add the item as a modifier. To delete a modifier, the modifier is selected and the Delete key pressed on the keyboard. To edit a modifier, either the modifier is double clicked or the Enter key is pressed.

Sub-modifiers represent the last level of modifiers that can be assigned to a menu tree. To add sub-modifiers, the modifier to which sub-modifiers are to be assigned is selected. Then, the focus is set on the sub-modifier window by clicking inside the Sub-Modifier window as follows: (1) clicking on Edit>Add Sub-Modifier; (2) pressing Ctrl + N; (3) right mouse clicking in the Sub-Modifiers window, then clicking on Add Sub-Modifiers or (4) clicking on the Add icon from the toolbar. If a menu is being built from scratch, the procedure is to enter the Long Name, Short Name, Code and Price in a Sub-Modifier dialog box similar to the Modifier dialog box shown in FIG. 2. As with modifiers, the Long Name is the full descriptive name of the item. The Short Name is the abbreviated name that will be displayed on the handheld device. The Code is the numeric or alphanumeric code for the item. As before, if there is an existing

database, the existing database can be browsed and menu items retrieved from the database. Clicking on the Browse button will bring up the existing database of menu items. The item to be added is then selected and OK clicked. The fields will then be filled with the information from the database. Clicking on OK again will add the item as a sub-modifier. To delete a sub-modifier, the sub-modifier is selected and the Delete key depressed on the keyboard. To edit a sub-modifier, either the sub-modifier is double clicked or the Enter key is pressed.

Menu categories are created from the root. Some examples of categories are Appetizers, Soups, Salads, Entrees, Desserts, etc. The first step is to click on Menu in the menu tree window. Categories are added by (1) clicking on the Add Category icon from the toolbar; (2) clicking on Edit > Add Category or (3) pressing Ctrl + T. As shown in FIG. 3, Menu Category dialog box 11 then appears in which to enter the Long and Short names for the menu category.

To add menu items to categories, the menu category which is being built is clicked. For example, if items are being added to Appetizers, the Appetizers branch is clicked on. Then the Edit > Add Item is clicked on or Ctrl + N pressed. As before, if a menu is being built from scratch, the procedure is to enter the Long Name, Short Name, Code, Prep Time, Recipe and Price into the Menu Item dialog box 12 shown in FIG. 4. The Long Name is the full descriptive name of the item. The Short Name is the abbreviated name that will be displayed on the handheld device. The Code is the numeric or alphanumeric code for the item. Prep Time is the time it takes to prepare the meal and Recipe would include preparation methods and ingredients that are used in the preparation of the item. If there is an existing database, the existing database can be browsed and menu items retrieved from the database. Clicking on the Browse button will bring up the existing database of menu items. The item to be added is then

selected and OK is clicked. The fields will then be filled with the information from the database. Clicking on OK again will add the item to the category.

Once the menu items have been entered, it may be desired to assign some modifiers to the menu items. For example, it may be desired to assign meat temperature to a steak order. To accomplish this, first the modifier to be assigned is selected, then the menu item on the tree view that is to be assigned the modifier is clicked on and then Edit > Assign Modifier is clicked on. Or, the modifier can simply be dragged and dropped onto the menu item to link them. A dialog box is then displayed asking if this modifier is a required modifier. If it is a required modifier, the display icon will be red but if it is a non-required modifier the display icon will be green. As many modifiers as are applicable can be assigned. If any changes are made to the modifiers, those changes will be automatically reflected throughout the menu tree.

Once the modifiers have been entered, it may be desired to assign sub-modifiers to the modifiers items. For example, it may be desired to add Honey Mustard as a sub-modifier to Dressing. To accomplish this, first the modifier to be assigned a sub-modifier is selected, then the sub-modifier window is clicked on, then Edit > Add Sub Modifier is clicked on, Ctrl+N entered or the Add icon from the toolbar is clicked on. Or, the sub-modifier can simply be dragged and dropped onto the modifier to link them.

When the menu has been completely configured, it can be previewed on a POS emulator on the desktop to verify that the menu is correctly configured before downloading it to the handheld device. To preview, File > Preview Database is clicked on or the Preview Database icon from the toolbar is clicked on. The handheld POS emulator on the desktop can then be run. If the configuration is deemed acceptable, the handheld device is connected to the desktop PC to ensure that a connection has been established; the POS application on the handheld device is

exited and File > Download Database is clicked on or the Download Database icon from the toolbar is clicked on. If there is an existing menu database on the handheld device, the system will ask if the existing database should be replaced. Yes is clicked if existing database replacement is desired.

A database function enables the creation of, e.g., a breakfast menu, lunch menu and dinner menu and downloading them to a handheld device. Functions available are (1) creating a new database; (2) opening an existing database; (3) saving a database under a different name. To access these functions, File is clicked on the menu bar.

The preferred embodiment encompasses customized layout, views and fonts. To set the focus on the view it is desired to change, click inside the desired window. The main customizing dialog box is accessed by clicking on View > Customize View. A dialog box 13, as shown in FIG. 5, will be displayed including tabs that allow the following options: selection of Columns to display in the list view by choosing and arranging the fields to display in the Modifiers and Sub-Modifiers windows; formatting Columns by specifying the column widths and justification; selecting Filter allows restricting the list to display only the items that meet certain criteria. For example, display of modifiers with codes between 500 and 550. Selecting Sort allows sorting the modifiers or sub-modifiers according to any of the available fields such as Name, Code or Price. Selecting Style facilitates choice of font type, style, size, etc. To change the font in a particular window, click on View > Fonts or right mouse click in the desired window and then click on Fonts. To change the size of the windows, drag the borders of the windows to expand or contract the size of the windows. To change the column widths, simply drag the edge of the column headers to increase or decrease the column widths.

A communications control program monitors and routes all communications to the appropriate devices. It continuously monitors the wireless network access point and all other devices connected to the network such as pagers, remote devices, internet Web links and POS software. Any message received is decoded by the software, and then routed to the appropriate device. No user action is needed during operation of the software once the application has been launched. To launch the communications control module, a Wireless Traffic icon is clicked on the desktop PC. When the program loads, the screen shown in FIG. 6 appears. Messages received are logged in the window 14 shown in FIG. 6 with a time stamp. The messages are also logged to a file on the hard drive. This provides a mechanism to monitor all traffic across the network (possibly useful for troubleshooting, or maintenance, but not necessary for normal operation). The program may be minimized so the screen is not displayed on the desktop, but it must be running for proper communications to exist between all devices on the network.

As stated, the preferred embodiment of the present invention includes the use of and compatibility with GUI technology. A drag-and-drop approach is used for organizing the tree structure 2 in the generated menu. Drag-and-drop is also used for assigning modifiers (modifiers can be dragged from the modifiers window 5 and dropped onto the menu item 4 for assignment). In-cell editing results in fast editing of items in building the menus. Customizable fonts enable users to change font types, style and size. Customizable layouts enable users to resize windows, change icons and display preferences. The inventive approach provides for fully persistent storage between sessions, even if a session is improperly or abruptly terminated. Font and the tree state (i.e., which nodes are expanded/collapsed) are stored between sessions. Layout for modifiers and sub-modifiers list views (filter, columns, formatting, font, etc.) are stored between sessions. The last database used is likewise stored between sessions. Splitter

views allow the user to see different views at the same time. Each view is displayed on its own section of the screen. Views can be resized via the keyboard or a mouse by simply dragging the splitter in the middle.

An automated function is provided to import existing POS databases into the inventive menu generation system and, as discussed above with respect to the detailed example of how to use the preferred embodiment, an automated download procedure is provided to transfer the desktop database onto a handheld device and/or Web page. Also as discussed, the preferred embodiment facilitates preview of the handheld device or Web page version of the POS menu on the desktop before downloading and configuration. Customizable desktop menu generation is contemplated, as discussed above, in the form of customizable fonts, columns, layouts, etc. The inventive approach also includes templates for common modifiers that can be assigned to similar menu items. The preferred embodiment also supports multiple databases, thus providing for the creation and storing of different menu databases on handheld devices such as breakfast, lunch or dinner menus. The user can then select the appropriate database to reflect the time of day.

FIG. 7 is a schematic representation of a point of sale interface 15 for use in displaying a page-type menu 16 created using the inventive menu generation approach. As can be seen from FIG. 7, the page menu is displayed in a catalogue-like point-and-click format whereas the master menu, FIG. 1, is displayed as a hierarchical tree structure. Thus, a person with little expertise can "page through" to complete a transaction with the POS interface and avoid having to review the entire menu of FIG. 1 to place an order. A PDA or Web page format could appear like FIG. 7 or the display could be configured for particular requirements since fully customizable menu generation and display are contemplated.

The POS interface on the handheld device supports pricing in the database or querying prices from the POS server. The POS device also can be customized with respect to "look and feel" for the particular version. As can be seen in FIG. 7, the POS interface provides for billing, status and payment with respect to orders. A myriad of options can be provided depending on the application.

Advanced database functions are provided in the preferred embodiment of the invention, including an automated download process onto handheld devices and/or Web sites. In the preferred embodiment, the menu generation system of the present invention uses an API called ActiveX Data Objects ("ADO") for database access. ADO is useful in a variety of settings. It is built on top of OLE DB and can be used to talk to databases and, in the future, any data source with any OLE DB driver. Advanced querying is supported. The database can be queried on virtually all fields. Queries can be built using SQL syntax for experienced users or can be created using a query builder which guides users through the creating process. Advanced error handling is supported. Errors occurring at run time can be trapped. A descriptive message is displayed to alert the user and provide error information. However, the application does not terminate when the errors happen. The source code is easy to maintain and modify, thus allowing for on time delivery of customized versions of the software. The advanced database functions produce well-designed databases that accommodate growth and scalability

The inventive menu generation approach provides a solution for the pervasive connectivity and computerization needs of the restaurant and related markets. The inventive solution includes automatic database management and synchronization, PDA and handheld wireless operating system integration and optimization, wireless communications and internet connectivity, user interface design, and graphics design.

In the preferred embodiment, the menu generation approach of the present invention uses Windows CE® as the operating system for the handheld devices. Windows CE® provides the benefits of a familiar Windows 95/98/NT® look and feel, built-in synchronization between handheld devices, internet and desktop infrastructure, compatibility with Microsoft Exchange®, Microsoft Office 9® and TCP/IP quick access to information with instant-on feature.

Windows CE® provides a basic set of database and communication tools for developer use. However, interfacing with these tools to provide application specific results can be a complex task. In addition to the menu generation described above, a set of software libraries described herein in conformance with the present invention not only enhances the basic Windows CE® functionality by adding new features but also maximizes the full potential of wireless handheld computing devices. Such features include fast synchronization between a central database and multiple handheld devices, synchronization and communication between a Web server and multiple handheld devices, a well-defined API that enables third parties such as POS companies, affinity program companies and internet content providers to fully integrate with computerized hospitality applications, real-time communication over the internet with direct connections or regular modem dialup connections and support for batch processing that can be done periodically throughout the day to keep multiple sites in synch with the central database.

The synchronous communications control module discussed above provides a single point of entry for all hospitality applications to communicate with one another wirelessly or over the Web. This communications module is a layer that sits on top of any communication protocol and acts as an interface between hospitality applications and the communication protocol. This layer can be easily updated to work with a new communication protocol without having to modify the core hospitality applications. The single point of entry works to keep all

wireless handheld devices and linked Web sites in synch with the backoffice server (central database) so that the different components are in equilibrium at any given time and an overall consistency is achieved. For example, a reservation made online is automatically communicated to the backoffice server which then synchronizes with all the wireless handheld devices wirelessly. Similarly, changes made on any of the wireless handheld devices will be reflected instantaneously on the backoffice server and the other handheld devices.

The software applications for performing the functions falling within the described invention can be written in any commonly used computer language. The discrete programming steps are commonly known and thus programming details are not necessary to a full description of the invention.

A simple point-to-point wireless capability is contemplated which permits simple digital messages to be sent from the wireless handheld devices to a receiver in a beeper and/or valet parking base-station. The POS interface of FIG. 7 is representative of the display on a typical wireless device used in conformity with the invention. A simple protocol is used to acknowledge receipt of the message and thus simultaneous communication is not necessary, which reduces the cost of the wireless link. The range of the wireless link is determined by the characteristics of the radio transceiver. Adding a wireless link allows paging of beeper equipped customers directly from the operator interface on the wireless handheld devices and communication to and from various input/output transmitters and receivers to update the status of the order, reservation or other information and thus further reduce the workload on the operator and enable operations to proceed much faster. This link could also be hardwired or otherwise implemented using any two-way messaging transport.