(19) European Patent Office
Office européen des brevets

(11) EP 1 369 842 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.12.2003 Bulletin 2003/50

(51) Int Cl.7: G09F 27/00

(21) Application number: 02010466.7

(22) Date of filing: 08.05.2002

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: Precisa Instruments AG
8953 Dietikon (CH)

(72) Inventors:
- Bühler, René, c/o Precisa Instruments AG
8953 Dietikon (CH)
- Huber, Rudolf, c/o Precisa Instruments AG
8953 Dietikon (CH)

(74) Representative: Rupp, Christian, Dipl.Phys. et al
Mitscherlich & Partner
Patent- und Rechtsanwälte
Sonnenstrasse 33
80331 München (DE)

(54) Wireless multimedia display device

(57) The underlying invention generally relates to the field of mobile computing, wireless communication, and interactive multimedia applications in mobile communication networks with high-speed access. Particularly, it refers to a customized multimedia information channel system presenting advertisement information (124a) and, if desired, other multimedia streams on a mobile communication and computing device (100) equipped with a Liquid Crystal Display (102) designed to meet modern business-to-business (B2B) requirements. In this connection, interactive operation is guaranteed by a digital wireless data and control link (108) between said mobile computing device (100) and a product (122) to be advertised.

In contrast to conventional solutions, said mobile computing device (100) comprises a User Control Board (101) with an Application Programming Interface (105c) providing an intercommunication between a software routine (105b), said User Control Board (101), the display (102) of said device (100), and an additional hard-disk drive (111) for storing content data (124a) to be rendered on the display (102) of said device (100). Thereby, said User Control Board (101) is capable of communicating with a specific file server (118) over a bidirectional air interface (108) and a Wireless Local Area Network (120) by transmitting user requests (123) and receiving content information (124a), receiving control information (124b) from a remote control device (116), and transmitting status information (124c) to the remote control device (116). Furthermore, said device (100) is capable of receiving identification information (126) about the product (122) from a tag device (114) attached to said product (122).

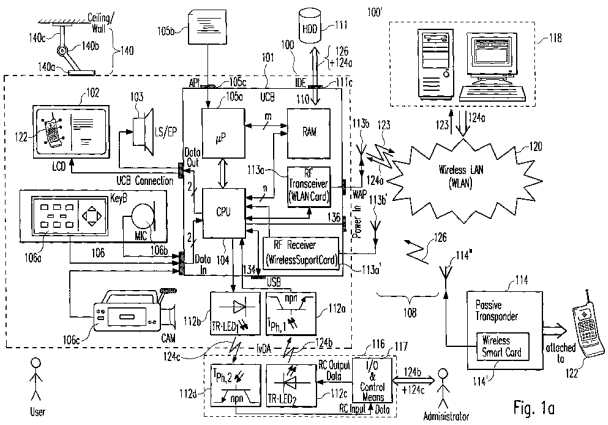

Fig. 1a

Description

FIELD AND BACKGROUND OF THE INVENTION

[0001] The underlying invention generally relates to the field of mobile computing, wireless communication, and interactive multimedia applications in mobile communication networks with high-speed access. Particularly, it refers to a customized multimedia information channel system presenting advertisement information and, if desired, other multimedia streams on a mobile communication and computing device equipped with a Liquid Crystal Display which meets modern business-to-business (B2B) requirements. In this connection, interactive operation is guaranteed by a bidirectional digital wireless data and control link realized as an RF interface between said device and a product to be advertised.

[0002] In the recent past, the Internet has emerged as a dynamic medium for channeling online transactions between customers and firms on a virtual marketplace (e-business). Due to the rapid growth of the World Wide Web (WWW), there has been a corresponding expansion in commerce on this robust platform. Likewise, wireless communications has become an inherent part of most people's working lives and lifestyles today and is one of the fastest growing applications within smart card industry. The next generation of Universal Subscriber Identification Modules (USIMs) will feature a variety of additional customer services such as online banking and trading, ticket reservations, ordering food deliveries, Internet access, weather reports and all different kind of additional location-based and personalized services.

[0003] Presently, new technologies are being developed which allow mobile telephones and other portable devices to comfortably access the Internet, and hence to be used for e-business applications. As they are portable, and due to the vast number of potential users, emerging wireless m-business applications will be at least as important as conventional Internet connections for e-business. This trend is mainly be driven by the massive deployment of wireless key technologies (e.g. Bluetooth, WAP, GPRS, and UTMS), mobile devices (e.g. PDAs and smartphones) and services (e.g. m-business, e-purses and e-vouchers), which will bring significant new challenges to enterprise information and resource management. As standards such as Wireless Access Protocol (WAP) evolve in line with Internet standards, Web access and content will become a market driver for mobile data.

[0004] Over the next few years, mobile technologies and the Internet will feed on each other in order to fuel e-business developments. With mobile telephone usage predicted to continue to outstrip PC usage in most markets worldwide, it is possible that many of the e-commerce systems that will evolve over the next decade will be based largely around wireless communications involving portable devices such as cellular telephones, Personal Digital Assistants (PDAs) and hybrids of these. Such portable devices will provide a low-cost form of Internet access for some and a bridge for continuous access for others. Furthermore, wireless communications has the potential to link diverse appliances in the home, office and factory, which, when combined with technologies such as Global Positioning System (GPS), creates many potentially interesting new applications. The penetration of wireless devices and a maturing Internet economy provide potentially powerful opportunities to satisfy business needs for increasing customer intimacy, greater responsiveness and shorter cycle times. Today, there are significant challenges in preparing for and managing the business and technology components of m-business.

[0005] Online commerce can be transacted in many forms, depending on the respective type of business activity. An emerging business model in online commerce for which the underlying invention can advantageously be applied is business-to-business (B2B) commerce: This includes inter-company trading and supplier networks, vertical industry exchanges, horizontal linkages between firms, and digital business-market mechanisms that include auctions, spot markets and others. The economic justification for these types of businesses lie in cost and scale efficiencies, product and service aggregation, and lower search costs combined with broader reach and convenience. Revenues are derived either on transaction-based fees, or long standing contractual relationships.

[0006] Although wireless access is creating considerable opportunities for m-business, it also involves significant complexities. Wireless carriers, Internet portals and application service providers have to create new strategic partnerships to avoid failure in a dynamic but immature new market. Furthermore, companies have to survey their corporate requirements and make prudent investments that are aligned with key business initiatives. The use of mobile devices for wireless access to corporate resources will result in substantial new management, security and support issues.

[0007] Rapid advances in handheld computing devices, wireless network connectivity and data transfer speeds are driving the revolution in wireless computing. Over the next few years, wireless data communications will emerge as a viable, cost-effective extension of and alternative to wired technologies. Thereby, companies will expect their mobile workforce to have the ability to work effectively anywhere and anytime. The impetus behind these developments is straight forward: enterprises that empower their mobile workforce have a platform for improving their competitive advantage.

[0008] The success of wireless data applications mainly depends on three factors: networks, devices, and applications. From the carrier side, there is the need for nationwide networks that have high availability, are cost-effective and

reliable. Furthermore, mobile devices will need to have long battery life, be lightweight, durable, easy to use and have easy-to-read screens. Recent developments in microelectronics such as flash memory, micro-displays and various input options have made PDAs smaller, faster, more reliable and cost-effective than ever before. For example, modern PDAs are provided with a built-in wireless radio transmitter for network connectivity, and new services are coming online that extend wireless data capabilities to the family of Palm handhelds.

[0009] Single-function mobile handheld devices, such as bar code scanners, pagers, and electronic organizers have been deployed across a variety of vertical applications. The next stage of development for mobile computing will involve the deployment of wireless, expandable devices capable of conducting enterprise data management and mobile communications with greater efficiency and at a lower total cost than their predecessors. Today, device suppliers stand at the cusp of the transition from a business-to-consumer (B2C)- to a business-to-business (B2B)-oriented marketplace. To that end, leading vendors are developing the next generation of portable devices that will dictate how enterprise users access and manage data and voice communications from a mobile access point.

BRIEF DESCRIPTION OF THE PRESENT STATE OF THE ART

[0010] Personal Digital Assistants (PDAs) are becoming increasingly ubiquitous, and technology such as Bluetooth and the IEEE 802.11 standard will bring PDAs into close interactive communication with other types of devices. Furthermore, cellular phones and pagers, which are primarily used for communication, are increasingly becoming programmable. Today, it is investigated how these kinds of SHDs can be used with all kinds of home, office, and factory equipment. The concept is that people can use their own SHDs, e.g. to control a photocopier in an office, a machine tool in a factory, the lights or a video cassette recorder at home, and almost any other kind of electronic device.

[0011] In addition to the capability to attach a PDA to a desktop or portable PC in order to allow a synchronization of calendars, emails, contact lists, and other personal data, PDAs are increasingly extended by attachment of a cell phone, printer, additional memory module, modem, or other peripheral devices.

[0012] A basic distinction of personal information devices can be made between Smart Handheld Devices (SHDs), which are used to access content, and desktop or notebook computers, which comprise keyboards and can thus be used to create content as well as access it. SHDs can be subdivided into telephones, which put voice first, and Personal Digital Assistants (PDAs), such as devices from Palm, Psion and others, which put data first. Telephones, of course, can handle some data, and PDAs are being given voice capabilities. But it is a matter of priorities. Handheld wireless devices fall into four broad categories: enhanced telephones, smartphones, PDA tablets and PDA clamshells. Smartphones and PDAs will subdivide into pen-based and keyboard-based variants. The small size ("form factor") of many mobile devices limits the amount and type of data that can be input or output, which will be key in determining the most suitable types of mobile application. The more data-centric an application, the more it will need larger screen sizes.

[0013] When mobile telephone capabilities are added to PDAs, more data-intensive applications will become possible. Speech recognition and enhanced displays using new technologies such as light-emitting polymers will also help to overcome the constraints of mobile devices' small size, further enhancing their usability for m-business. For example, Nokia has its "Dial A Coke" concept for vending machines, where product choice is made by telephone and the price is billed by the cellular operator. A car wash in Helsinki also works in a similar way. Peoples Phone of Hong Kong is launching a service to allow bill payment by credit card via mobile telephones. Mobistar of Belgium has demonstrated loading e-cash onto Proton smart cards over mobile telephones. Telenor of Norway is running a public trial allowing users to select and pay for cinema and theater tickets by mobile telephone. Investors in Singapore can buy and sell shares using the data capabilities of their mobile telephones.

[0014] Many PDAs also have either a Universal Serial Bus (USB) or a serial port. An USB or serial cable can be attached to the port, or the entire device can be inserted into a cradle that provides an USB or serial connection to a desktop or portable PC, or to USB or serial devices. They may also support one of the following expansion interfaces, thereby facilitating the connection peripherals, addition of memory or provision of network connectivity. Each interface accommodates a specific type of card that is inserted into the interface:

- The Springboard interface is a proprietary interface designed by Handspring for their Visor family (Palm platform) of devices. It has the largest physical volume of the peripheral cards. Furthermore, the Springboard interface provides the highest data transfer rate because it allows attached I/O devices to be connected directly to the processor bus. Besides, it can accommodate a separate battery to support higher power functions.

- CompactFlash is an industry-standard expansion interface for portable devices. It is widely supported, and although the CompactFlash card size is relatively small, it provides enough room to implement many functions. It is a popular interface for adding memory to digital cameras and portable MP3 players. In addition, serial ports, modems, Ethernet cards, cellular network attachments, and Global Positioning System (GPS) devices are implemented on CompactFlash cards. Due to this wide support, the interface is expected to be supported by many devices in the

future.

- The SmartMedia interface is the proprietary design currently manufactured by Toshiba and Samsung. Toshiba has trademarked the name, but has made the specification available for free to the industry in the hope of creating a standard. Not all SmartMedia cards are interchangeable. Some interfaces require 5.0 V from the connecting PDA, some use 3.3 V, and others can be adapted to either voltage. Thereby, the voltage of the card must be matched to the voltage of the specific portable device.

- MultiMediaCard was created by a joint agreement between Siemans, Hitachi and Sandisk. The MultiMediaCard has the size of a postage stamp and is designed to provide a small memory storage medium for portable MP3 music players. Its small size limits its ability to support a variety of other I/O attachments.

- Secure Digital is based on the MultiMediaCard interface. Furthermore, this interface also supports the SDMI specification. Similar in size to the MultiMediaCard, the Secure Digital card is used mainly for simple memory expansion. Although the specification enables the development of I/O devices using cables or other extensions, this approach can be cumbersome due to its small size. An advantage of the Secure Digital interface is that it can also accept a MultiMediaCard.

[0015] Most PDAs are provided with infrared ports, which implement the Infrared Data Association (IrDA) standard. These ports can be used to connect the PDA to a desktop or portable PC, exchange contact information with other mobiles, or connect the PDA to cell phones, printers, and other infrared devices. As the Bluetooth personal area network (PAN) technology becomes more prevalent, IrDA ports are expected to be superseded on handheld devices. Nowadays, Bluetooth networking technology is deemed as the key component in the context of techniques providing short-range wireless connectivity. The main purpose of Bluetooth is to replace cables between electronic devices, such as telephones, PDAs, laptop computers, digital cameras, printers, and fax machines by using a low-cost radio chip.

[0016] In future, SHDs that accept PC cards will be able to utilize Bluetooth PC cards. Pairing these PC card-enhanced PDAs with wireless technology based on Bluetooth yields the potential to provide a wider range of connectivity options than products by Handspring or Palm. Motorola recently released a cell phone called Timeport 270 that has a Bluetooth add-on. With a Bluetooth PC card inserted into a PDA, it can wirelessly access the Internet from the Bluetooth card on the Motorola cell phone up to 30 feet away. The Motorola cell phone receives the packets by using the Wireless Application Protocol (WAP) and transmits these packets to nearby PDAs or computers. Thereby, the user can access any WAP Web site on the Internet. The only drawback is that users must carry two separate devices - a cell phone and a PDA.

[0017] Currently, most PDAs and more and more cellular phones are equipped with an internal expansion port for media cards such as InfoSticks or multimedia cards like CompactFlash cards. Thereby, external expansion interfaces like a printer or an Access Point (AP) of a mobile network can be used in combination with a short-range radio technology like Bluetooth by applying an integrated radio module placed in an expansion port of the PDA, which can e.g. be used as a CompactFlash card.

[0018] Fully compliant with the ISO standard 14443A, MIFARE® is a well-known industry standard for contactless and dual interface smart card schemes. With an immense worldwide installed base, it is a well proven RF communication technology for transmitting data between a card and a reader device. The platform offers a full range of compatible integrated circuits (ICs) for contactless smart cards and card readers, as well as dual interface ICs that provide a secure link between the contactless and contact card markets.

[0019] Delivering a competitive and highly reliable platform for all types of service, from very low cost solutions to multifunctional cards including contactless technology, Java cards - smart cards that are able to execute Java byte code, similar to the way Java-enabled browsers do - are presently at the forefront of the smart card market. Thereby, Java helps to make smart cards more accessible to developers and business people by providing a well-understood, familiar environment. However, since standard Java with all of its libraries (especially in the Java 2 guise) is far too big to fit on a smart card, a stripped-down version of Java has specially been created. Java cards are based on a subset of the Java Application Programming Interface (API) plus some special-purpose card commands.

[0020] Together with standards like Java Card 2.1 and Open Platform 2.0, highly optimized Java implementations, 8-bit WE family and MIFARE® PROX dual interface smart card controller ICs by Philips Semiconductors are paving the way for the development of Open Platform smart cards. Capable of being dynamically updated, even after issuance, said cards offer high security between application, advanced cryptography based on the Data Encryption Standard (DES), increased flexibility for service providers, including use in existing MIFARE®-based transport schemes, easy implementation, and finally quick time-to-market for new services. These Open Platform and multi-application cards are offering unprecedented choice for financial institutions. A wide variety of off-the-shelf solutions are available from several leading industry providers, resulting in a great choice of multi-sourced Java products.

[0021] Philips Semiconductors' 8-bit WE family of security and crypto-controller smart card ICs offers new features such as highly integrated 0.35 μm process technology featuring five metal layers. It delivers the flexibility and security to support a wide range of applications on a single card. They are suitable for security-sensitive application such as banking, SIM cards for mobile phones, pay TV and Security Access Modules (SAM) for Point-of-Sale (POS) terminals.

[0022] For the communication between said smart cards and their environment, any standard telecommunication networks, e.g. Local Area Networks (LANs), Metropolitan Area Networks (MANs) and/or Wide Area Networks (WANs) which can be accessed via modem or ISDN, can be used.

[0023] The status of the applied rendering devices can be controlled by means of a single interface. Thereby, alarm signals can be received via e-mail, mobile phone or pager.

[0024] Broadcast transmissions of multimedia content via satellite and/or multicast networks allows to transfer several hundred or thousand display positions. Thus, a plurality of rendering devices can be addressed by a single transmission, which significantly reduces cost and time needed for said broadcast transmission.

[0025] The data transmission to the rendering devices can be performed by means of an Internet standard protocol, e.g. via File Transfer Protocol (FTP) using the Transmission Control Protocol (TCP) and/or the Internet Protocol (IP). By applying FTP servers, two or more rendering devices can simultaneously be addressed.

OBJECT OF THE UNDERLYING INVENTION

[0026] In view of the explanations mentioned above, it is the primary object of the underlying invention to enable users to create television-style multimedia presentations and to distribute them to television and/or computer screens in remote locations.

[0027] This object is achieved by means of the features of the independent claims. Advantageous features are defined in the dependent claims. Further objects and advantages of the invention are apparent in the following detailed description.

SUMMARY OF THE INVENTION

[0028] The proposed solution according to the underlying invention is basically dedicated to a customized multimedia information channel system presenting advertisement information and, if desired, other multimedia streams on a mobile communication and computing device equipped with a Liquid Crystal Display (LCD) designed to meet modern business-to-business (B2B) requirements. In this connection, interactive operation is guaranteed by a bidirectional digital wireless data and control link realized as an IrDA interface between said device and an item to be advertised.

BRIEF DESCRIPTION OF THE CLAIMS

[0029] In the following sections, the main aspects and embodiments of the underlying invention as disclosed in the appended claims shall briefly be summarized. A more detailed description of the invention and said claims will follow in a subsequent section dedicated to the description of the enclosed figures.

[0030] A first embodiment of the underlying invention is directed to a multimedia display device comprising a screen for displaying content information, a control means for controlling the screen display, means for enabling a user to input information, and a bidirectional air interface for wirelessly transmitting data from/to the control means. Thereby, said control means is adapted to receive both content information and remote control information over the air interface, the remote control information designating setting parameter for the display of content information on the screen, to locally store content information received over the air interface in a permanent storage device in the multimedia display device for later display on the screen, and to transmit both information representing the current status of the multimedia display device as well as user input information over the air interface.

[0031] Further aspects of said embodiment pertain to a similar multimedia display device comprising a screen for displaying content information, a control means for controlling the screen and the speaker means, a bidirectional air interface for wirelessly transmitting data from/to the control means, and a local storage means for the later display of content information received over the air interface. Said multimedia display device is additionally equipped with means for wirelessly detecting the presence of a tag device in the neighborhood of the multimedia display device, wherein the control means dynamically control the display of the content information depending on the detection of a tag device.

[0032] Furthermore, a second embodiment of the underlying invention refers to a display terminal for advertisement information which comprises a local storage device for advertisement information, a database associating identification codes of wireless smart cards with predefined advertisement information, a receiver for the presence of a wireless smart card in the neighborhood of the display terminal, and a controller for dynamically displaying locally stored advertisement information associated with the identification code of the wireless smart card detected.

[0033] The following claims are related to a method for the display of visual information on a display device comprising

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.