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(54) Title: METHOD AND APPARATUS FOR THE DISTRIBUTION AND DOWNLOAD OF DIGITAL MEDIA CONTENT

(57) Abstract: A portable payment and data storage device comprises an interface arranged to receive digital media content, and at least one memory element for storing received digital media content, identification information, and information about an amount of available credit associated with the device. An encryption module enables the identification information and/or information about the amount of available credit to be held in an encrypted form. Signal processing logic is arranged to manage the amount of available credit in exchange for digital media content being downloaded onto the device, and perform user identification upon a connection being established with a content access point, prior to deducting credit from the amount of available credit. The user identification may be performed by validating at least one of a password, a personal identification number (PIN), and fingerprint scan information.

FIG. 3
Declarations under Rule 4.17:

— as to applicant’s entitlement to apply for and be granted a patent (Rule 4.17(U))

— as to the applicant’s entitlement to claim the priority of the earlier application (Rule 4.17(Hi))
METHOD AND APPARATUS FOR THE DISTRIBUTION AND DOWNLOAD OF DIGITAL MEDIA CONTENT

5 Field of the invention

The field of the invention relates to a method and apparatus for the distribution and download of digital media content, and more particularly to a portable payment and data storage device and a digital media content access system, and a method therefor.

10 Background of the Invention

With the continuing development and evolution of digital media, for example in the form of music, video, electronic books (e-books), etc., there is a growing trend for the distribution of media content away from the more traditional physical media carriers such as compact disks (CDs), digital versatile disks (DVDs), printed books, etc, towards electronic distribution of media content in digital format.

Currently, consumers are able to purchase such digital content 'online', via the Internet, whereby a consumer is able to pay for such media content by providing their credit card/debit card details or the like via a secure connection to the content supplier, or to a financial transaction site employed by the content supplier, and upon payment the user is subsequently able to download the desired media content.

A first problem with such traditional methods of distributing digital media content is the need for a user to provide credit card/debit card details, etc., over the Internet each time they wish to purchase such media content, or at the very least for each new content supplier, or whenever a previous credit card/debit card expires in the case where a site may securely maintain credit card/debit card details of registered users. Each time the user provides their credit card/debit card details they are required to trust both the secure connection over which the details are provided, and the site to which the credit card/debit card details are being provided. Due to the potentially large number of media content suppliers from which a user may wish to download various formats of digital media content, a user may be required to provide their credit card/debit card details to a large number of sites, thereby significantly increasing the potential risk of credit card/debit card fraud, etc.

In addition to the above mentioned security problems that may exist when purchasing digital media content using traditional methods, further security issues may
arise when a user wishes to purchase digital media content when away from home. For example, if a user is using a public computer, or other computer to which third parties may have access, there is the additional security risk that credit card/debit card details may be obtainable by such third parties via that computer. As a result, users may be reticent about purchasing digital media content in this manner when away from home, restricting the distribution of media content.

A further problem with traditional methods of distributing digital media content is that vendors who accept payment by credit card/debit card are typically charged by the credit card/debit card companies for each individual transaction. Due to the generally low prices for downloading digital media content, such credit card/debit card charges can be significant relative to the actual payment being made, and are necessarily passed on to the consumer. Thus, such credit card/debit card charges can significantly increase the price for downloading digital media content.

Thus, there exists a need for an improved method and apparatus for the distribution and downloading of digital media content.

Summary of the Invention

Accordingly, the invention seeks to mitigate, alleviate or eliminate one or more of the abovementioned disadvantages singly or in any combination.

According to a first aspect of the invention, there is provided a portable payment and data storage device comprising an interface arranged to receive digital media content, at least one memory element for storing identification information, information about available credit and received digital media content. The device further comprises an encryption module for enabling the information about the available credit and/or identification information to be held in an encrypted form. The portable payment and data storage device further comprises signal processing logic arranged to manage an amount of available credit associated with the portable payment and data storage device in exchange for digital media content being downloaded onto the portable payment and data storage device, and perform user identification upon a connection being established with a content access point, prior to deducting an amount of credit from the available credit associated with the portable payment and data storage device, the user identification being performed by validating at least one of: a password; a personal identification number (PIN) and fingerprint scan information.
In this manner, the portable payment and data storage device may be used to perform transactions whereby the credit associated with the portable payment and data storage device may be exchanged as payment for digital media goods, services, etc.

Furthermore, digital media content and the like may be purchased using credit associated with the portable payment and data storage device, without a need for a credit card and/or debit card to be used for the transaction.

In one optional embodiment of the invention, the encryption module may be adapted to encrypt downloaded digital media content prior to the downloaded digital media content being stored within the memory element on the portable payment and data storage device, to prevent unauthorised access to the data.

In one optional embodiment of the invention, the signal processing logic may be arranged to implement 'on-the-fly' encryption when receiving and storing information or content.

In one optional embodiment of the invention, the signal processing logic may be arranged, upon a connection being established with a content access point, to determine whether sufficient credit associated with portable payment and data storage device is available prior to deducting an amount of credit from the available credit associated with the portable payment and data storage device.

In one optional embodiment of the invention, the signal processing logic may be arranged, upon a connection being established with a content access point, to receive a transaction request from the content access point comprising information identifying media content to be downloaded and an amount of credit to be deducted in exchange for the media content being downloaded.

In one optional embodiment of the invention, the interface logic may comprise at least one of: universal serial bus (USB) interface logic; and wireless radio frequency (RF) interface logic.

In one optional embodiment of the invention, the signal processing unit may be arranged to store encrypted credit and/or debit card information within the at least one memory element.

In one optional embodiment of the invention, the portable payment and data storage device comprises one of: a memory stick; and a mobile telephone handset.

In one optional embodiment of the invention, the signal processing unit of the portable payment and data storage device may be arranged to store encrypted credit/debit card information within the at least one memory element. The signal processing unit may be arranged to:

(i) receive card details via a USB connection; and
(N) only allow access to the card details after performing user identification by validating fingerprint scan information.

According to a second aspect of the invention there is provided a digital media content access system comprising at least one content access point for downloading digital media content to the portable payment and data storage device of the first aspect of the invention. The at least one content access point comprises: an interface for transmitting digital media content to at least one portable payment and data storage device; and signal processing logic arranged to download digital media content to the at least one portable payment and data storage device in exchange for credit from the at least one portable payment and data storage device to which the digital media content is being downloaded.

According to a third aspect of the invention there is provided a method for purchasing digital media content. The method comprises: establishing a connection between a content access point and a portable payment and data storage device, the portable payment and data storage device comprising at least one memory element for storing received digital media content, identification information, and information about an amount of available credit, and wherein the identification information and/or the information about the amount of available credit are held in an encrypted form;

performing user identification by validating at least one of a password, a personal identification number (PIN), and fingerprint scan information; and deducting credit from the available amount of credit associated with said portable payment and data storage device, in exchange for downloading digital media content onto the portable payment and data storage device.

In one optional embodiment of the invention, the portable payment and data storage device may store encrypted credit and/or debit card information within the at least one memory element. The user identification may further comprise validating additional biometric data.

According to a fourth aspect of the invention there is provided a computer-readable storage element having computer-readable code stored thereon for programming signal processing logic to perform the method for purchasing digital media content of the third aspect of the invention.

These and other aspects, features and advantages of the invention will be apparent from, and elucidated with reference to, the embodiments described hereinafter.
Brief Description of the Drawings

Embodiments of the invention will be described, by way of example only, with reference to the accompanying drawings, in which:

FIG. 1 illustrates an example of a portable payment and data storage device adapted in accordance with some embodiments of the present invention.

FIG. 2 illustrates an example of part of a digital media content system according to some embodiments of the present invention.

FIG. 3 illustrates an example of part of a digital media content system according to some alternative embodiments of the present invention.

FIG. 4 illustrates a simplified flowchart of an example of a method for purchasing digital media content according to some embodiments of the present invention.

FIG. 5 illustrates a simplified flowchart of an example of a method for distributing digital media content according to some embodiments of the present invention.

FIG. 6 illustrates a part of an example of a digital media content access system according to some embodiments of a further aspect of the present invention.

FIG. 7 illustrates an example of a portable payment and data storage device adapted in accordance with an alternative embodiment of the present invention.

Detailed Description

Referring now to the drawings, and in particular FIG. 1, there is illustrated an example of a portable payment and data storage device 100, for example a 'memory stick', or a portable electronic device such as a mobile telephone handset, or the like, adapted in accordance with some embodiments of the present invention. The portable payment and data storage device 100 comprises an interface 120 that is suitable for receiving digital media content. For example, the interface 120 may be arranged to provide a physical connection to, say, a media content access point (not shown), such as by way of a universal serial bus (USB) connection or the like. Alternatively, the interface 120 may be arranged to provide a wireless connection, for example by way of a Bluetooth™ or wireless local area network (WLAN) radio frequency (RF) link. The portable payment and data storage device 100 further comprises one or more memory elements, such as memory element 110 illustrated in FIG. 1.
As previously mentioned, traditional methods for the distribution of digital media content, for example over the Internet, suffer from the problem of a high potential risk of credit card/debit card fraud, as well as the problem of credit card/debit card charges that vendors are required to pay for each transaction. Accordingly, in one example, the portable payment and data storage device 100 of FIG. 1 further comprises an encryption module 135 for enabling information about the available credit and/or identification information to be held in an encrypted form. The portable payment and data storage device 100 further comprises a signal processing logic 130 arranged to manage an amount of available credit associated with the portable payment and data storage device 100. In this manner, the portable payment and data storage device 100 may be used to perform transactions whereby the credit associated with the portable payment and data storage device 100 is used for payments, and can be exchanged for digital media goods, services, etc. In particular, the signal processing logic 130 is arranged to manage an amount of available credit associated with the portable payment and data storage device 100 by making payments in exchange for digital media content being downloaded onto the portable payment and data storage device 100, and perform user identification upon a connection being established with a content access point, prior to deducting an amount of credit from the available credit associated with the portable payment and data storage device. The user identification may be performed by validating at least one of: a password; a personal identification number (PIN); and finger print scan information.

In this manner, digital media content and the like may be securely purchased using credit associated with the portable payment and data storage device 100, without the need for a credit card/debit card to be used for the transaction. As a result, the above mentioned problems of potential credit card/debit card fraud and credit card/debit card charges may be substantially alleviated.

The encryption module 135 may be adapted to encrypt downloaded digital media content prior to the downloaded digital media content being stored within the memory element 110 on the portable payment and data storage device 100 to prevent unauthorised access to the data. For example, upon receipt of information or content, the signal processing logic 130 may be arranged to implement 'on-the-fly' encryption by providing such received information or content to the encryption module 135. The encryption module 135 may then encrypt the information/content, and provide the encrypted information/content back to the signal processing unit 130 for storing within the memory element 110.

For the illustrated example, the encryption module 135 is provided by a discrete logical unit operably coupled to the signal processing logic 130. However, it will be
appreciated that the encryption module 135 may alternatively form an integral part of the signal processing logic 130. In this manner, the signal processing logic 130 may be arranged to cause information/content to be encrypted by the integrated encryption module 135 prior to such information/content being stored within the memory element 110. Alternatively, it is contemplated that the encryption module 135 may alternatively form an integral part of the memory element 110. In this manner, the signal processing logic 130 may simply forward received information/content to the memory element 110 for storing therein. Upon receipt of such information/content, the memory element 110 may cause the received information/content to be encrypted by the integrated encryption module 135 prior to it being stored.

Referring now to FIG. 2, there is illustrated an example of part of a digital media content access system 200 according to some embodiments of the present invention. The digital media content access system 200 comprises one or more content access points, such as content access point 210. Content access point 210 comprises an interface 220 for at least transmitting digital media content to one or more portable payment and data storage devices, such as the portable payment and data storage device of FIG. 1. Accordingly, the interface 220 of content access point 210 may be arranged to provide a physical connection to a portable payment and data storage device, such as by way of a universal serial bus (USB) connection or the like. Alternatively, the interface 220 of content access point 210 may be arranged to provide a wireless connection, for example by way of a Bluetooth™ or wireless local area network (WLAN) radio frequency (RF) link. The content access point 210 further comprises signal processing logic 230 arranged to download digital media content to a portable payment and data storage device via the interface 220 in exchange for credit from that portable payment and data storage device, for example as described in greater detail below.

For the example illustrated in FIG. 2, the content access point 210 further comprises one or more digital media content libraries or the like, which for the illustrated example are illustrated generally at 242, 244, 246, and to which the signal processing logic 230 is operably coupled. Each library 242, 244, 246 may be arranged to store digital media content comprising one or more format types. By way of example, each library 242, 244, 246 may be arranged to store digital media content comprising one or more of:

(i) audio files comprising formats such as MP3 (MPEG-1 audio layer 3), WAV (WAVeform audio format), WMA (Windows™ Media Audio) etc;
(ii) video files comprising formats such as MPEG-1, or MPEG-4;
image files comprising formats such as JPEG (Joint Photographic Experts Group), GIF (Graphics Interchange Format), TIFF (Tagged Imaged File Format), PNG (Portable Network Graphics), etc; and

electronic literature and/or document files comprising formats such as ‘.txt’ (plain text format), HTML (HyperText Markup Language) PDF (Portable Document Format), .doc (Microsoft Word™ format), ‘.wpd’ (WordPerfect™ format), ‘.ppt’ (Microsoft PowerPoint™ format), etc.

In this manner, a user may be able to view digital media content files stored within the libraries 242, 244, 246, for example via a user interface illustrated generally at 260 operably coupled to the signal processing logic 230. The user may then select one or more desired media content files, and upon connection of, say, the portable payment and data storage device 100 of FIG. 1 to the content access point 210 via their respective interfaces 120, 220, the desired digital media content files may be downloaded to the memory element 110 of the portable payment and data storage device 100 in exchange for credit associated with the portable payment and data storage device 100.

Referring now to FIG. 3, there is illustrated an example of part of a digital media content access system 300 according to some alternative embodiments of the present invention. The digital content access system 300 of FIG. 3 comprises one or more content access points, such as content access point 310. Content access point 310 comprises an interface 320 for at least transmitting digital media content to one or more portable payment and data storage devices, such as the portable payment and data storage device 100 of FIG. 1. The content access point 310 further comprises signal processing logic 330 arranged to download digital media content to a portable payment and data storage device via the interface 320 in exchange for credit from the portable payment and data storage device.

The content access point 310, and more particularly the signal processing logic 330 of content access point 310, is operably coupled to one or more digital media content libraries or the like, which for the illustrated example are illustrated generally at 342, 344, 346. For the illustrated example, the content access point 310 is operably coupled to the digital media content libraries 342, 344, 346 via the Internet 370. In this manner, the digital media content libraries 342, 344, 346 may be accessed by a plurality of content access points 310. It is contemplated that the digital media content libraries 342, 344, 346 may be provided and managed by a separate legal entity to the or each content access point 310. It will be appreciated that the content access point 310 may be operably coupled to the digital media content libraries 342, 344, 346 other than by way of the Internet 370. For example, the or each content access point 310 may be operably coupled...
coupled to the digital media content libraries 342, 344, 346 via a local area network (LAN), etc.

Referring now to FIG. 4, there is illustrated a simplified flowchart 400 of an example of a method for purchasing digital media content according to some embodiments of the present invention, such as may be implemented by way of computer-readable code stored within a computer-readable storage element, such as, say, memory element 150 of portable payment and data storage device 100 of FIG. 1, and suitable for programming the signal processing logic 130 of the portable payment and data storage device 100.

The method starts at step 405 with a connection being established between, for example, the portable payment and data storage device 100 of FIG. 1 and a content access point, such as the content access point 210 of FIG. 2 or the content access point 310 of FIG. 3. For the illustrated example a transaction request is then received from the access point at step 410. For example, the transaction request may identify one or more digital media content files that a user has selected for download, along with an amount of credit required to be exchanged in order for the files to be downloaded. Next, at step 415, user identification is performed. For example, a user interface 260, 360 of the content access point 210, 310, of FIG. 2 or FIG. 3 may comprise user identification means such as a fingerprint scanner. A user is prompted to 'scan' one or more fingerprints to enable the fingerprint scanner to obtain fingerprint scan information. The fingerprint scan information may then be forwarded to the signal processing logic 130 of the portable payment and data storage device 100 of FIG. 1. The signal processing logic 130 may then validate the received fingerprint scan information by comparing it to fingerprint information stored within an area of memory 110, and if the received fingerprint scan information matches that stored in memory 110, it may be determined that the user has been identified as a person authorised to perform a transaction using that portable payment and data storage device 100. Identity verification may alternatively, or in addition, be achieved by validating a PIN code and/or a password entered by the user. In this manner, the signal processing logic 130 may be arranged to perform user identification prior to deducting an amount of credit from the available credit associated with the portable payment and data storage device 100. It is contemplated that fingerprint information for one or more authorised users may be stored within the memory element in an encrypted form, for example having been encrypted by the encryption module 135. In this manner, received fingerprint scan information may itself be encrypted by the encryption module 135 prior to it being compared to fingerprint information stored within the memory element 110.
The user may not be confirmed as being authorised to perform a transaction using the portable payment and data storage device 100, based on at least one of the entered PIN or password, or the received fingerprint scan information not matching that stored in memory 110. In this case, from step 420, the method moves on to step 425, and the transaction request may then be rejected, and the method ends at step 460. However, referring back to step 420, if the user is confirmed as being authorised to perform a transaction using the portable payment and data storage device 100, the method moves on to step 430, where for the illustrated example the amount of credit associated with the portable payment and data storage device 100 is sufficient in order to complete the transaction. For example, the signal processing logic 130 of the portable payment and data storage device 100 may be arranged to determine an amount of available credit value within an area of memory 110, and to update the value as appropriate whenever a transaction is completed. In this manner, the signal processing logic 130 may determine whether sufficient credit associated with portable payment and data storage device is available prior to deducting credit from the available credit associated with the portable payment and data storage device.

If sufficient credit is not available, in step 435, the method moves to step 425 where the transaction request is rejected, and the method then ends at step 460. However, referring back to step 435, if sufficient credit is available, the method moves on to step 440, where the transaction request is accepted, for example by way of sending a transaction accept message back to the content access point 210, 310. In this manner, the content access point 210, 310 is informed that the user is authorised to perform transactions using the portable payment and data storage device 100, and that the portable payment and data storage device 100 comprises sufficient credit in order to complete the transaction. Accordingly, the content access point 210, 310 may then proceed with initiating the download of the digital media content files selected by the user to the portable payment and data storage device 100.

Next, in step 445, the digital media content files identified within the transaction request message may be downloaded and stored within memory, for example memory 110 of portable payment and data storage device 100 of FIG. 1. Once the digital media content files have been successfully downloaded and stored, the method then moves on to step 450, where the available credit is updated to take into account the current transaction. For example, the signal processing logic 130 may be arranged to deduct the amount of credit identified within the received transaction request message from the available credit value in memory. The transaction is then completed at step 455, for example by way of the signal processing logic 130 sending a transaction complete
message to the content access point 210, 310 indicating that the media content has been received and stored in memory, and that the available credit has been updated accordingly. The method then ends at step 460.

In addition to the steps shown in FIG. 4, the method may further comprise performing user identification by validating additional biometric data. Performing an iris scan would be one way of further checking the identity of a user.

Referring now to FIG. 5, there is illustrated a simplified flowchart 500 of an example of a method for distributing digital media content that can be used together with some embodiments of the present invention. The method for distributing digital media content may be implemented by way of computer-readable code stored within a computer-readable storage element, such as, say, memory element 250 of content access point 210 of FIG. 2, or memory element 350 of content access point 310 of FIG. 3, and be suitable for programming the signal processing logic 230, 330 of the respective content access point 210, 310.

The method starts at step 510 with a transaction being initiated, for example by way of a user selecting one or more media content files to be purchased and downloaded via a user interface 260, 360 of the content access point 210 of FIG. 2, 310 of FIG. 3. Next, in step 520, a connection is established with a portable payment and data storage device, such as the portable payment and data storage device 100 of FIG. 1. Such a connection may be established via the respective interfaces 120, 220, 230 of the portable payment and data storage device 100 and the content access point 210, 310, for example by way of a physical connection such as a USB connection, or a wireless connection such as a Bluetooth or WLAN connection. Once a connection with a portable payment and data storage device has been established, the method moves on to step 530, where a transaction with the portable payment and data storage device is requested. This request may be, for example, in the form of a transaction request message being transmitted to the portable payment and data storage device identifying one or more digital media content files that a user has selected for download, along with an amount of credit required to be exchanged in order for the files to be downloaded. The method then waits for confirmation from the portable payment and data storage device that the transaction request has been accepted in step 540.

As illustrated at step 545, the method may comprise providing user identification functionality for the portable payment and data storage device. For example, a user interface 260, 360 of the content access point 210, 310, of FIG. 2 or FIG. 3 may comprise user identification means such as a fingerprint scanner. A user is prompted to 'scan' one or more fingerprints to enable the fingerprint scanner to obtain fingerprint scan
information. The fingerprint scan information may then be forwarded to the signal processing logic 130 of the portable payment and data storage device 100. In addition or instead, a password or PIN code may be required. For example, a user may be required to enter a personal identification number (PIN) or a password via a user interface 260, 360 of the content access point 210, 310, which is then forwarded to the signal processing logic 130 of the portable payment and data storage device 100.

If the transaction request is not accepted by the portable payment and data storage device at step 550, for example due to the user not being identified, or due to insufficient credit being available on the portable payment and data storage device, the method moves on to step 560, where the transaction is cancelled, and the method ends at step 590. However, if the transaction request is accepted by the portable payment and data storage device at step 550, the method moves on to step 570 where the digital media content files identified within the transaction request message may be downloaded to the portable payment and data storage device. The transaction is then completed at step 580, for example by way of the portable payment and data storage device sending a transaction complete message to the content access point 210, 310 indicating that the media content has been received and stored in memory, and that the available credit has been updated accordingly. The method then ends at step 590.

The embodiments of the present invention hereinbefore described provide the advantage that a consumer is able to purchase and download digital media content from a content access point without having to provide credit card/debit card details in order to complete the transaction. In this manner, the consumer is able to freely purchase digital media content from many different content providers, without the risk of their credit card/debit card details being stolen, and thus significantly reducing their risk of becoming a victim of credit card/debit card fraud, etc.

In accordance with some embodiments of the invention, the content access point may be in a form of a consumer's home computer, whereby the home computer may be connected to digital media content over, say, the internet, for example as illustrated for the content access point 310 of FIG. 3. In this manner, a software application running on the home computer may manage the access to, and downloading of, digital media content from libraries accessible via the internet. The home computer would also manage the exchange of credit from the portable payment and data storage device, to which the media content is downloaded, to the owner of the respective library or libraries.

As previously mentioned, embodiments of the present invention hereinbefore described provide the advantage that a consumer is able to purchase and download digital media content from a content access point without having to provide credit
card/debit card details in order to complete the transaction. Significantly, not only is this beneficial when purchasing digital media content from a home environment, but also enables digital media content to be purchased safely (i.e. with significantly reduced risk of credit card/debit card fraud) from public locations. Thus, and in accordance with some alternative embodiments of the invention, content access points may be provided within public locations, for example within retail environments such as shops or shopping centres, airports, train stations, libraries, etc. In this manner, by distributing such content access points throughout a variety of public environments, consumers are afforded greater and more convenient access to digital media content, and providers of digital media content are provided with greater distribution opportunities for the media content.

In addition to reducing the potential risk of credit card/debit card fraud, and improving the distribution of digital media content, the examples hereinbefore described provide the further advantage that, since credit card/debit card transactions are not required each time digital media content is downloaded, the content providers are not required to pay corresponding credit card/debit card transaction charges. As a result, such credit card/debit card charges are not required to be passed on to the consumer, thereby enabling the cost of downloading digital media content to be kept low.

It is further contemplated that a portable payment and data storage device adapted in accordance with the present invention, such as the portable payment and data storage device 100 of FIG. 1, need not be limited to use for transactions involving downloading of digital media content, but may also be used for others forms of transaction, such as paying for parking, train tickets, road tolls, calls from public telephones, etc. It is even contemplated that credit stored on such portable payment and data storage devices may be used to purchase goods etc.

Referring now to FIG. 6, there is illustrated a part of an example of a digital media content access system 600 adapted according to a further aspect of the present invention. The digital media content access system 600 comprises one or more charging points, such as charging point 610. Charging point 610 comprises an interface 620 for establishing a connection with one or more portable payment and data storage devices, such as the portable payment and data storage device 100 of FIG. 1.

The charging point 610 further comprises signal processing logic 630 operably coupled to a credit provider site via, for the illustrated example, the Internet 670. The signal processing logic 630 is arranged to increase, or 'charge', the available credit associated with a portable payment and data storage device connected thereto, in exchange for a payment being made, such as a credit card/debit card payment, to the credit provider. For example, a user may purchase credit from the credit provider using
the user interface 630 by way of providing credit card/debit card details in a traditional manner. Upon completion of the purchase of such credit, the purchased credit may then be transferred to a portable payment and data storage device. Although a credit card/debit card transaction is still required in this instance, a single such transaction may be used for a plurality of digital media content purchases, etc. In one embodiment of the present invention, therefore, the signal processing unit 130 may be arranged to store encrypted credit/debit card information within the at least one memory element 110. The signal processing unit may be arranged to receive card details via a USB connection, and they may be encrypted using encryption module 135. Furthermore, the signal processing unit 130 may only allow access to the card details after performing user identification by validating fingerprint scan information. This arrangement provides for a very high level of security for the card details.

It is contemplated that a charging point, such as charging point 630, may also function as a content access point, such as the content access point 310 of FIG. 3. Furthermore, it is contemplated that the charging points may be provided within a home environment, such as in the form of a home computer, or alternatively may be provided within public locations, for example within retail environments, such as shops or shopping centres, airports, train stations, libraries, etc.

Referring now to FIG. 7, there is illustrated an example of a portable payment and data storage device 700 adapted in accordance with an alternative embodiment of the present invention. The portable payment and data storage device 700 comprises an interface 720 suitable for transmitting and receiving digital media content. For example, the interface may be arranged to provide a physical connection to, say, a media content access point, such as by way of a USB connection or the like. Alternatively, the interface 720 may be arranged to provide a wireless connection, for example by way of a Bluetooth or WLAN RF link. The portable payment and data storage device 700 further comprises an encryption module 735 for enabling information about the available credit and/or identification information to be held in an encrypted form. The portable payment and data storage device 700 further comprises signal processing logic 730 arranged to manage an amount of available credit associated with the portable payment and data storage device 700, and one or more memory elements, such as memory element 710.

In particular, the signal processing logic 730 may be arranged to manage an amount of available credit associated with the portable payment and data storage device 700 by making payments in exchange for digital media content being downloaded onto the portable payment and data storage device 700, and perform user identification upon a connection being established with a content access point, prior to deducting an amount of
credit from the available credit associated with the portable payment and data storage device. Accordingly, the portable payment and data storage device 700 of FIG. 7 further comprises fingerprint scanning logic 740 arranged to perform a scan of a user's fingerprint, and to provide details of the scan to the signal processing logic 730. In this manner, the signal processing logic 730 may compare fingerprint scan information for a user to information stored within an area of memory in order to validate the fingerprint scan information, and to determine whether the user is entitled to use the credit associated with the portable payment and data storage device 700. In particular, by providing fingerprint scanning logic 740 as part of the payment and data storage device 700, content access points are not required to include fingerprint scanning capabilities.

In order to facilitate the identification of a user of a portable payment and data storage device, for example in order to ensure that the user is entitled to use the credit associated with the portable payment and data storage device, information relating to, say, a PIN, password or fingerprint scan for that user is required to be stored within an area of non-volatile memory of the portable payment and data storage device. In addition, information relating to the available credit associated with the portable payment and data storage device is also required to be stored within an area of non-volatile memory. In order to protect such information from being illegitimately accessed and/or changed, it is contemplated that some form of security is implemented. For example, the information may be encrypted by the encryption module 135, 735 prior to being stored within memory.

It is further contemplated that data stored on the portable payment and data storage device, such as downloaded digital media content or the like, may be encrypted prior to being stored within memory to prevent unauthorised access to the data. For example, the signal processing logic of the portable payment and data storage device may be arranged to implement 'on-the-fly' encryption when receiving and storing data.

In accordance with some example embodiments, it is contemplated that 'pre-paid' credit may be bought, for example as described with reference to FIG. 6, and 'loaded' onto the payment and data storage device 100, 700. However, it is alternatively contemplated that credit/debit card details may be encrypted and stored within the memory element 110, 710 of the payment and data storage device 100, 700 in a secure/encrypted manner. For example, such information may be encrypted by the encryption module 135, 735 and only accessed upon receipt of recognisable fingerprint scan information and/or a personal identification number (PIN)/password. For example, credit/debit card details may be uploaded via the interface 120, 720 (for example on a user's home computer) along with fingerprint scan information, and encrypted before being stored in the memory element 110, 710. The credit/debit card information may be
used to pay for credit to be uploaded to the payment and data storage device 100, 700. However, the credit/debit card information may be used for, say, purchasing digital media content etc. For example, upon identification of an authorised user, such as by way of fingerprint scan information, the encrypted credit/debit card information may be provided to a content access point 310, 410. The content access point 310 may then provided the encrypted credit/debit card information to a secure payment authorisation server (for example managed by the credit/debit card issuer), which decrypts the credit/debit card information and authorises the payment. In this manner, only encrypted credit/debit card information is provided to content access points and the like.

In this document, the terms 'memory element', 'computer-readable medium' and the like may be used generally to refer to media such as, for example, internal memory, storage devices, or storage units. These and other forms of computer-readable media may store one or more instructions for use by signal processing logic, to cause the signal processing logic to perform specified operations. Such instructions, generally referred to as 'computer program code' (which may be grouped in the form of computer programs or other groupings), when executed, enable the signal processing logic to perform functions of embodiments of the present invention. Note that the code may directly cause the signal processing logic to perform specified operations, be compiled to do so, and/or be combined with other software, hardware, and/or firmware elements (e.g., libraries for performing standard functions) to do so.

In an embodiment where the elements are implemented using software, the software may be stored in a computer-readable medium and loaded into a computing system using, for example, a removable storage drive, a drive or communications interface. The software instructions or computer program code, when executed by the signal processing logic, cause the signal processing logic to perform the functions of the invention as described herein.

It will be appreciated that, for clarity purposes, the above description has described embodiments of the invention with reference to different functional units or logic module elements or signal processors. However, it will be apparent that any suitable distribution of functionality between different functional units or logic module elements or signal processors, for example with respect to the UE, may be used without detracting from the invention. For example, it is envisaged that functionality illustrated to be performed by separate processors or controllers or logic module elements may be performed by the same processor or controller or logic module element. Hence, references to specific functional or logical units are only to be seen as references to suitable means for
providing the described functionality, rather than indicative of a strict logical or physical structure or organization.

Some aspects of the invention may be implemented in any suitable form including hardware, software, firmware or any combination of these. The invention may optionally be implemented, at least partly, as computer software running on one or more data processors and/or digital signal processors. Thus, the elements and components of an embodiment of the invention may be physically, functionally and logically implemented in any suitable way. Indeed, the functionality may be implemented in a single unit, in a plurality of units or as part of other functional units.

Although the invention has been described in connection with some embodiments, it is not intended to be limited to the specific form set forth herein. Rather, the scope of the invention is limited only by the claims. Additionally, although a feature may appear to be described in connection with particular embodiments, one skilled in the art would recognize that various features of the described embodiments may be combined in accordance with the invention.

Furthermore, although individually listed, a plurality of means, elements or method steps may be implemented by, for example, a single component or element. Additionally, although individual features may be included in different claims, these may possibly be advantageously combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. Also, the inclusion of a feature in one category of claims does not imply a limitation to this category, but rather the feature may be equally applicable to other claim categories, as appropriate.

Furthermore, the order of features in the claims does not imply any specific order in which the features must be performed and in particular the order of individual steps in a method claim does not imply that the steps must be performed in this order. Rather, the steps may be performed in any suitable order. In addition, singular references do not exclude a plurality. Thus, references to 'a', 'an', 'first', 'second', etc. do not preclude a plurality.

Thus, a method and apparatus for the distribution and downloading of digital media content has been described that may alleviate at least some of the shortcomings of past and present techniques and/or mechanisms.
CLAIMS

1. A portable payment and data storage device comprising:

an interface arranged to receive digital media content;

at least one memory element for storing received digital media content, identification information, and information about an amount of available credit associated with the portable payment and data storage device;

an encryption module for enabling the identification information and/or information about the amount of available credit to be held in an encrypted form; and

signal processing logic arranged to:
(i) manage the amount of available credit in exchange for digital media content being downloaded onto the portable payment and data storage device; and
(ii) perform user identification upon a connection being established with a content access point, prior to deducting credit from the amount of available credit, the user identification being performed by validating at least one of:
  a password;
  a personal identification number (PIN); and
  finger print scan information.

2. The portable payment and data storage device of Claim 1 wherein the encryption module is adapted to encrypt downloaded digital media content prior to the downloaded digital media content being stored within the memory element on the portable payment and data storage device to prevent unauthorised access to the data.

3. The portable payment and data storage device of Claim 1 or Claim 2, wherein the signal processing logic is arranged to implement 'on-the-fly' encryption when receiving and storing information or downloaded digital media content.

4. The portable payment and data storage device of any preceding Claim, wherein the signal processing logic is arranged, upon a connection being established with a content access point, to determine whether sufficient credit associated with the portable payment
and data storage device is available, prior to deducting credit from the amount of available credit associated with the portable payment and data storage device.

5. The portable payment and data storage device of any preceding Claim, wherein the signal processing logic is arranged, upon a connection being established with a content access point, to receive a transaction request from the content access point comprising information identifying media content to be downloaded and the credit to be deducted in exchange for the media content being downloaded.

6. The portable payment and data storage device of any preceding Claim, wherein the interface logic comprises at least one of:
   - universal serial bus (USB) interface logic;
   - and
   - wireless radio frequency (RF) interface logic.

7. The portable payment and data storage device of any preceding Claim wherein the portable payment and data storage device comprises one of:
   - a memory stick; and
   - a mobile telephone handset.

8. The portable payment and data storage device of any preceding Claim wherein the signal processing unit is arranged to store encrypted credit or debit card information within the at least one memory element.

9. The portable payment and data storage device of Claim 8, wherein the signal processing unit is arranged to:
   (i) receive credit or debit card details via a USB connection; and
   (ii) only allow access to the credit or debit card details after performing user identification by validating fingerprint scan information.

10. A digital media content access system comprising at least one content access point for downloading digital media content to a portable payment and data storage device according to any preceding Claim, the at least one content access point comprising:
    - an interface for transmitting digital media content to at least one portable payment and data storage device that comprises an interface, a memory element and an encryption module; and
    - signal processing logic arranged to download digital media content to the at least
one portable payment and data storage device in exchange for credit from the at least one portable payment and data storage device to which the digital media content is being downloaded.

11. A method for purchasing digital media content, the method comprising:

establishing a connection between a content access point and a portable payment and data storage device, the portable payment and data storage device comprising at least one memory element for storing received digital media content, identification information, and information about an amount of available credit associated with said portable payment and data storage device, and wherein the identification information and/or the information about the amount of available credit are held in an encrypted form;

performing user identification by validating at least one of:
  a password;
  a personal identification number (PIN); and
  finger print scan information;

deducting credit from the available amount of credit associated with said portable payment and data storage device, in exchange for downloading digital media content onto the portable payment and data storage device.

12. The method of Claim 11, wherein the portable payment and data storage device stores encrypted credit/debit card information within the at least one memory element.

13. The method of claim 11 or claim 12, wherein performing user identification further comprises validating additional biometric data.

14. A computer-readable storage element having computer-readable code stored thereon for programming signal processing logic to perform a method for purchasing digital media content, the code operable for:

establishing a connection between a content access point and a portable payment and data storage device, the portable payment and data storage device comprising at least one memory element for storing received digital media content, identification information, and information about an amount of available credit associated with said portable
payment and data storage device, and wherein the identification information and/or the information about the amount of available credit are held in an encrypted form;

performing user identification by validating at least one of: a password; a personal identification number (PIN); and fingerprint scan information;

deducting credit from the available amount of credit associated with said portable payment and data storage device, in exchange for downloading digital media content onto the portable payment and data storage device.

15. The computer-readable storage element of Claim 14, wherein the computer-readable storage medium comprises at least one of a hard disk, a CD-ROM, an optical storage device, a magnetic storage device, a Read Only Memory, ROM, a Programmable Read Only Memory, PROM, an Erasable Programmable Read Only Memory EPROM, EPROM, an Electrically Erasable Programmable Read Only Memory, EEPROM, and a Flash memory.
FIG. 4

405  CONNECTION WITH ACCESS POINT

410  RECEIVE TRANSACTION REQUEST FROM ACCESS POINT

415  PERFORM USER IDENTIFICATION

420  USER CONFIRMED?

430  CHECK AVAILABLE CREDIT

435  SUFFICIENT CREDIT?

440  ACCEPT TRANSACTION REQUEST

445  DOWNLOAD AND SAVE TRANSACTION DATA

450  UPDATE AVAILABLE CREDIT

455  COMPLETE TRANSACTION

460  END

425  REJECT TRANSACTION REQUEST

2/4
### A. CLASSIFICATION OF SUBJECT MATTER

INV. G07F17/16 G06Q20/00

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)

G07F G06Q

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

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>WO 01/31599 A1 (SMARTFLASH LTD [GB]; HERMEN ARD HULST [GB]; RACZ PATRICK SANDOR [GB]) 3 May 2001 (2001-05-03) * abstract page 1, paragraph 1 - page 17, paragraph 3 figures 1-13</td>
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### D. Further documents are listed in the continuation of Box C

- * Special categories of cited documents
  - "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
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  - "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
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