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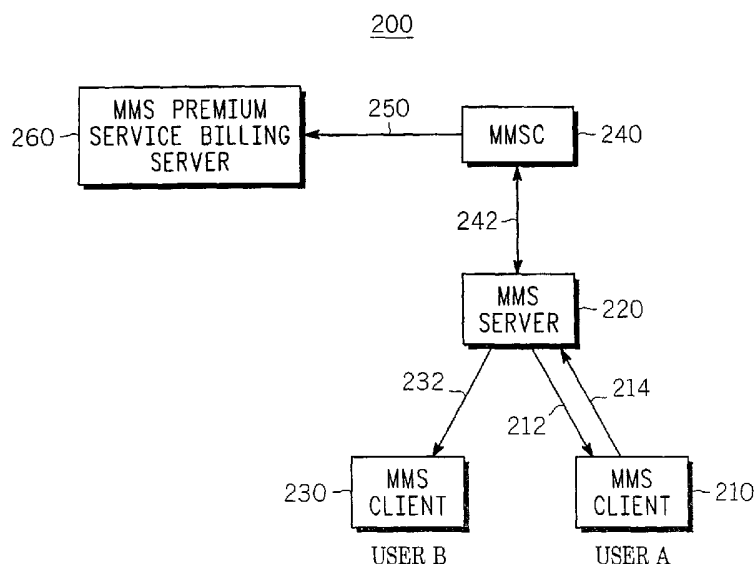
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[Continued on next page]

(54) Title: MULTIMEDIA MESSAGING SYSTEM (MMS) BILLING SYSTEM AND METHOD OF OPERATION



(57) Abstract: A multimedia message billing system (200) comprises a multimedia messaging controller (240) operably coupled to a multimedia messaging server (220) that distributes multimedia message content (100). One or more multimedia messaging clients (210, 230, 410) accesses, receives or distributes the multimedia message content (100). The multimedia message content (100) contains an embedded copyright notice (140) that is extracted to trigger a billing event to charge a user of a multimedia messaging client (210, 230, 410) for accessing, receiving or distributing the multimedia message content (100). In this manner, a billing mechanism enables legitimate distribution and/or editing and/or forwarding of multimedia message content, with implicit approval from the content owner. A charge can be levied on the user of the multimedia-messaging client based on the extracted copyright notice.

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BILLING SYSTEM AND METHOD OF OPERATION

Field of the Invention

5 This invention relates to multimedia messaging systems (MMS). The invention is applicable to, but not limited to, billing for multimedia content distributed within MMS.

10 Background of the Invention

Future Multimedia Messaging Systems (MMS) will allow users to download small quantities of time-sensitive content (images, video, music, audio clips, graphics,
15 text, etc.) from multimedia content servers for consumption on their MMS enabled handheld terminals.

It is anticipated that access to the multimedia content will usually require a small payment (and most likely a
20 micro payment) that can be collected via the user's mobile communication system service provider's billing system. This will be in a similar manner to that used in premium SMS services, such as the "Who wants to be a millionaire" game supported by the Vodafone cellular
25 network. It is also envisaged that the user may wish to share their downloaded multimedia content with friends and family, e.g. by attaching it to a multimedia message that they generate on their handheld terminal.

30 A multimedia message allows combinations of text, graphics, video, audio and other future multimedia

- 2 -

formats in one message. It is possible to attach multimedia content to a multimedia message in much the same way that it is possible to attach documents to an e-mail. The multimedia message is then shared with other
5 people by sending the multimedia message to them.

A billing system needs to be provided to ensure that content owners, operators and mobile handset manufacturers can gain revenue from this peer-to-peer
10 (P2P) distribution of multimedia content. Content providers are always looking for methods to ensure that they receive payment for any content consumed regardless of the method of transmission, for example, from provider to consumer or from one consumer to another consumer.
15 There are a number of P2P networks designed for swapping multimedia data such as Napster, AudioGalaxy, Kazaa. Much of the data that is transferred across such networks is copyrighted material.

20 Therefore, content providers have been attempting to shutdown these networks or to require them to incorporate technology that ensures copyright holders are paid the royalty payments that are owed to them. This includes distribution of the multimedia content both from server
25 to client (client-server) and then subsequent re-distribution from one client to another (P2P). So far, the multimedia content providers have been largely unsuccessful in this aim.

30 A suitable billing mechanism to charge for such multimedia content has not yet been developed. The

- 3 -

inventors of the present invention have recognised that the billing mechanism must be very lightweight. In this regard, the monetary value of each individual piece of content needs to be small but the volume of this content distribution is enormous. Indeed, content providers are keen on encouraging widespread distribution of such multimedia content by making usage of the content inexpensive. It is envisaged that a small amount of fraud may be tolerated, as the content will be of time-limited value (e.g. relating to this week's soap opera, or yesterday's soccer match).

Currently, a billing system for premium short message services (SMS) exists in the Global System for Mobile communication (GSM) cellular standard. However, this billing system only involves assigning a different phone number to send an SMS to, which triggers a premium rate charge at the Short Message Service Centre (SMSC).

Such a system would not work with the envisaged uses of MMS content. A primary reason for the inadequacy of such a solution is that the billing system must be able to identify and trigger billing only when copyrighted MMS content passes through the Multimedia Message Service Centre (MMSC). In addition, the present premium SMS billing system would only charge for the first download of the content. Thus, subsequent use of the content (from P2P distribution), which is currently envisaged as the primary market for multimedia content, would be unaccounted for.

- 4 -

Technically complete, but potentially complex, solutions include MPEG-21 and P/Meta standards. The MPEG-21 standard is currently under development and is unfortunately a number of years away from offering a practical solution. The MPEG-21 standard has features such as a Digital Item Declaration (DID) and Digital Item Identification and Description (DIID). A digital item includes resources, metadata and structure. MPEG-21 also contains an Intellectual Property Management and Protection (IPMP) component for digital rights management (DRM). It encompasses work for the management and protection of MPEG-4 audio-visual objects and MPEG-7 Descriptors, Descriptor Schemes and Descriptions.

MPEG-7 has recently been ratified as an international standard. MPEG-7 offers a rich set of audio-visual descriptions for multimedia content. The MPEG-7 standard includes provision for metadata relating to usage rights of content. In general terms, it is envisaged that these descriptions (or metadata) could be used to incorporate data related to general billing mechanisms. However, it is far from clear how MPEG-7 could be adapted to support the billing needs of the MMS standard.

The inventors of the present invention envisage that the Digital Rights Management (DRM) system relating to the content that is to be billed for must also be sufficiently lightweight in order to keep the costs low. This will encourage the rapid uptake of multimedia content in MMS. This would also preclude usage of MPEG-21.

- 5 -

MPEG-21 is a large complex standard developed by many companies and interested parties. As such, its use may require royalty payments to those companies and
5 interested parties that have IPR in MPEG-21; a similar situation is happening now with MPEG-4. Certain relevant parts of MPEG-21, such as the Digital Item Declaration (DID), Digital Item Identification (DII) and Intellectual Property Management and Protection (IPMP), are due to be
10 standardised later in the year. However, as is normally the case, products using these technologies would only be made available much later, sometimes by a few years.

In addition, usage of MPEG-21 for billing purposes
15 requires the content to be registered with certification authorities. Certificates governing usage of the content must be exchanged whenever the content is transmitted or consumed. The cost per transaction of an MPEG-21 based billing mechanism is likely to significantly exceed the
20 value of the small pieces of multimedia content that are the target of the invention described hereafter.

Currently, the only known mechanisms for billing for MMS messages are described in US20010053687 A1, entitled
25 "Method for addressing billing in a message service, messaging service system, server and terminal", with inventor Timo Sivula; and W09966746 A2, entitled "A method for delivering messages in a wireless communications system using the same protocol for all
30 types of messages" with inventors Ahti Muhonen, et al. These patent applications propose a time or frequency

- 6 -

based charging of MMS messages independent of their multimedia content. These are clearly unsuitable for the aforementioned multimedia content distribution needs.

5 EP 1139244 A2 (Hitachi) describes analysing a watermark that modifies the multimedia data (e.g. image or soundtrack) itself, where data within the watermark is looked up to ascertain the copyright owner. However, this process may incur significant costs both in operation and
10 in the retrospective/new addition of watermarks to currently held media, together with the innate property of watermarks that they cannot be subsequently modified, for example when the copyrighted media is sold or licenced.

15

A need therefore exists for an improved billing system and method of billing, particularly for MMS applications, wherein the abovementioned disadvantages may be alleviated.

20

Statement of Invention

In accordance with a first aspect of the present invention, there is provided a multimedia message billing
25 system, as claimed in Claim 1.

In accordance with a second aspect of the present invention, there is provided a multimedia messaging server, as claimed in Claim 15.

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- 7 -

In accordance with a third aspect of the present invention, there is provided a multimedia message billing server, as claimed in Claim 16.

- 5 In accordance with a fourth aspect of the present invention, there is provided a multimedia messaging controller, as claimed in Claim 17.

- 10 In accordance with a fifth aspect of the present invention, there is provided a multimedia messaging controller, as claimed in Claim 18.

- 15 In accordance with a sixth aspect of the present invention, there is provided a method of billing one or more users of multimedia messaging for accessing, receiving or distributing multimedia message content, as claimed in Claim 19.

- 20 In accordance with a seventh aspect of the present invention, there is provided a storage medium, as claimed in Claim 20.

- Further aspects of the present invention are as claimed in the dependent Claims.

25

- In summary, the inventive concepts of the present invention address the disadvantages of prior art arrangements by providing a mechanism to levy a charge on a user of a multimedia messaging accessing, receiving or distributing multimedia message content. This invention makes use of a copyright notice embedded within a
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- 8 -

multimedia content message, for example, a user-data atom field of an MP4 formatted file. The copyright notice is extracted whenever the multimedia message content is distributed, thereby triggering a billing event. The
5 billing event causes a charge to be levied on a user of a multimedia messaging accessing, receiving or distributing multimedia message content.

Brief Description of the Drawings

10

Exemplary embodiments of the present invention will now be described, with reference to the accompanying drawings, in which:

15 FIG. 1 shows an example of an MP4 file format that can be adapted in accordance with the preferred embodiment of the present invention.

FIG. 2 shows a multimedia messaging system block diagram
20 adapted in accordance with the preferred embodiment of the present invention.

FIG. 3 illustrates a first example of a billing event for accessing of multimedia content, in accordance with the
25 preferred embodiment of the present invention.

FIG. 4 illustrates a second example of a billing event for distribution of multimedia content, in accordance with the preferred embodiment of the present invention.

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- 9 -

FIG. 5 illustrates a third example of a billing event for distribution of multimedia content, in accordance with the preferred embodiment of the present invention.

5 FIG. 6 is a flowchart illustrating the operation of a billing module in an MMSC, in accordance with a preferred embodiment of the invention.

Description of Preferred Embodiments

10

In summary, the preferred embodiment of the present invention proposes a lightweight billing system applicable to multimedia messaging systems (MMS). In particular, the preferred embodiment focuses on billing
15 for copyrighted peer-to-peer content distribution via MMS. In the context of the present invention, the term 'lightweight' defines a simple mechanism that uses minimal resources in terms of bandwidth and processing power. Furthermore, the mechanism introduces such low
20 monetary cost that the cost of the billing transaction is much lower than the very small value (fractions of pence) of the multimedia content.

Referring now to FIG. 1, an example of multimedia content
25 encapsulated in an MP4 file format, with a copyright notice embedded within the header, is illustrated in accordance with the preferred embodiment of the present invention. The MP4 file format 100 is used to distribute MPEG-4 based video 120, audio 110 and text 130 content.
30 In particular, it is proposed that an appropriate copyright notice 140 is embedded within the user-data

- 10 -

atom field of the MP4 file format. In this regard, the preferred billing mechanism requires no changes to existing standards.

- 5 It is envisaged that the copyright notice may take many forms. A preferred example is to format the copyright notice to include: the multimedia content owner 142, the Year 144, a Serial number 146 and a Checksum 148. The serial number is preferably unique for each piece of
- 10 multimedia content. A MMS billing server would use this number to assign charges to the user of the multimedia content, as well as assign royalty payments to any relevant party.
- 15 Clearly, a skilled artisan would appreciate that many alternative mechanisms exist to uniquely generate a copyright notice, which are not specific to four fields or indeed any of the four fields described above.
- 20 The preferred embodiment of the present invention is described with regard to a single embedded copyright notice. However, it is within the contemplation of the invention that there may be multiple copyright atoms, perhaps using different language codes. For example,
- 25 where editing has resulted in a combination of two or more copyrighted works in multimedia content, then it is envisaged that multiple copyright atoms would be supported within the MP4 file.
- 30 The copyright notice 140 is processed by a Multimedia Message Service Centre (MMSC) to create a billing event.

- 11 -

In this regard, an MMS content billing system is created and configured to receive billing event messages from the MMSC. The billing event messages indicate that a copyright notice 140 has been recovered by the MMSC, thereby triggering the billing event. The multimedia content message billing system then charges one or more MMS customers in accordance with the billing event. The charge is based only on the multimedia content file itself without use of metadata or heavyweight Digital Rights Management (DRM) systems such as MPEG-21.

It is envisaged that the multimedia content provider creates the multimedia content file (including clips of audio, video, image, graphics, text, etc.) and encapsulates it in an MP4 file format with a copyright notice. Preferably, the copyright notice is also logged with the MMS content billing system service provider.

The preferred embodiment of the present invention uses the MP4 syntax as follows (from ISO/IEC JTC 1/SC 29/WG 11 N3850, 2000-10-19, ISO/IEC 14496-1: 2000(E), "Information technology - Coding of audio-visual objects - Part 1: Systems"). This is a reference to the systems part of the MPEG-4 standard, which documents the overall MPEG-4 system (how the various video, audio and other modules fit together). In particular, the reference defines the MP4 file format, which is the standard file format for MPEG-4 encoded data.

In the MPEG-4 standard, a specification for one of the 'atoms' that may be present in an MPEG-4 file can be

- 12 -

found at section 13.2.3.27 "User-data atom", with the following characteristics:

Atom Type: 'udta'
Container: Movie Atom ('moov') or Track Atom
5 ('trak')
Mandatory: No
Quantity: Any quantity

An atom is a structure that contains a header and its
10 associated data. The header gives information about the atom's type (in this case 'udta') and its size. It can also be thought of as a field. An MPEG-4 file will contain one or more atoms of different types. Some atoms are mandatory, like the Movie Atom ('moov'). The 'udta'
15 atom can be contained within a larger 'moov' or 'trak' atom and is not mandatory.

The user-data atom contains objects that declare user information about the containing atom and its data in an
20 MPEG-4 presentation or stream. Hence, the user-data atom is a container atom for informative user-data. This user data is formatted as a set of atoms with more specific atom types, which declare more precisely their content, e.g. in FIG. 1 declaring the content as audio 110, video
25 120 and text 130.

Referring now to FIG. 2, a block diagram 200 of an example system is illustrated, in accordance with the preferred embodiment of the present invention. Note that
30 only one MMS server 220 is shown in FIG. 2. However, in practice, the original content owner may be operating a

- 13 -

server separately from the one used to forward messages to subscribers.

- In operation, a first MMS client (operated by user A) 210
5 requests a multimedia content download 212 from the MMS server 220. Upon requesting the multimedia content download, the MMS server forwards the multimedia content message 242 to the MMSC 240.
- 10 The multimedia messaging controller includes a processor that extracts the embedded multimedia content's copyright notice received from the MMS server 220. In response to extracting a copyright notice, the processor triggers a billing event so that user A can be charged accordingly
15 for accessing, receiving or distributing the multimedia message content. The MMSC then informs 250 the MMS premium service billing server 260 of the billing event, so that the charge can be effected.
- 20 When the multimedia content message passes through the MMSC 240, the whole message need not be decoded. It is sufficient to parse the bit stream to identify the copyright notice, and then generate the billing event based on the copyright notice alone. In this manner, the
25 processor resource within the system is not wasted.

Implicit in the preferred embodiment of the present invention is the process of revenue sharing once the multimedia content usage has been logged. In this
30 regard, user A may modify the multimedia content that is downloaded 212, before forwarding 214 the modified

- 14 -

multimedia content to a second MMS client 230, via the MMS server 220. When the MMS server receives the modified content, it sends 242 the multimedia content message to the MMSC 240. The MMS server 220 also
5 forwards 232 the modified multimedia content to the second MMS client 230 (operated by user B). The MMSC 240 extracts the copyright notice from the multimedia content message. The copyright notice triggers a billing event, which is sent 250 to the MMS premium service billing
10 server 260 to effect a charge for the modified multimedia content to user B. In accordance with a preferred embodiment of the present invention, it is also envisaged that the MMS server, as it is aware of the origin of the message (user A), it is able to generate an event that
15 also states "charge user A for sending message to user B".

In the preferred embodiment of the present invention, it is also envisaged that differential pricing may be
20 implemented. One example of differential pricing could be made dependent upon the market value of the multimedia content being provided. In this manner, users may decide whether they wish to pay a higher price for full
multimedia content or a lower price for a subset of the
25 full multimedia content.

Although the MMSC 240 and the MMS premium service billing server 260 are shown as separate entities, it is envisaged that they may in fact be co-located. Indeed,
30 it is within the contemplation of the invention that the

- 15 -

MMSC may be configured, in some instances, to run the MMS premium service billing software.

More generally, the adaptation of one or more known MMS
5 servers and/or an MMSC to implement the aforementioned
inventive concepts may be effected in any suitable
manner. For example, new apparatus may be added to a
conventional MMS server and/or a convention MMSC, or
alternatively existing parts of a conventional MMS server
10 and/or a conventional MMSC may be adapted, for example by
reprogramming one or more processors therein. As such,
the required adaptation may be implemented in the form of
processor-implementable instructions stored on a storage
medium, such as a floppy disk, hard disk, PROM, RAM or
15 any combination of these or other storage multimedia.

It is also within the contemplation of the invention that
such adaptation to handle multimedia content messages
containing a copyright notice may alternatively be
20 controlled, implemented in full or implemented in part by
adapting any other suitable part of a communication
system. Although the above elements are typically
provided as discrete and separate units (on their own
respective software/hardware platforms), divided across
25 the network, it is envisaged that other configurations
may be used.

Multimedia content may be consumed in various ways. A
few possible scenarios are detailed hereafter. In each,
30 a billing event is generated at the MMSC 240.

- 16 -

Referring now to FIG. 3, a first scenario 300 of multimedia content consumption is illustrated. In this simple case, an MMS server 220 has been configured to hold a database of multimedia content, for example in an MP4 file format. The multimedia content in the database is accessible by the MMS clients. It is envisaged that an owner of the MMS content 100, for example the governing body of European football (UEFA), may generate a piece of interesting content and upload the multimedia content to the MMS server 220 for subsequent distribution. The content may, for example, be the winning goal scored in a cup final. The content may comprise some video 120, audio 110, text 130, graphics, still images, etc. A user is then able to download this multimedia content from MMS server 220 via their mobile operator e.g. Vodafone. For this content, the user is charged, say, a premium rate to receive the multimedia content message.

20 The user consumes the multimedia content on their handset using his/her MMS client 210. The message is decomposed into its textual, audio and video elements, which are rendered by the MMS client on the handset.

25 In some aspects, this download operation is similar to the "Who wants to be a Millionaire" SMS game in that the consumer is charged for receiving the multimedia content in much the same way as the consumer is charged for receiving an SMS message. However, in accordance with the preferred embodiment of the present invention, the multimedia content also provides additional content, in

- 17 -

the form of additional video and audio tracks, which contain the copyright notice. The copyright notice is arranged such that it is encapsulated in the downloaded multimedia content message, and is extracted by the MMSC
5 for billing purposes. Additionally, should the MMS client's user wish to forward (or modify and forward) the multimedia content, the further distribution of the content is configured to incur further charges. Such advantages are described below with respect to FIG. 4 and
10 FIG. 5.

Referring now to FIG. 4, a second scenario 400 of multimedia content consumption is illustrated. In this scenario, an MMS server 220 is configured to route (or
15 store and route) multimedia content, for example in an MP4 file format, from an MMS client 210. For example, the user (A) of the MMS client 210 believes that his/her multimedia content would be of interest to some other users. He/she therefore forwards 414 the multimedia
20 content via 432 the MMS server 220 to other MMS clients (e.g. user B of a second MMS client 230 and user C of a third MMS client 410).

The MMS server 220 also passes on 242 the multimedia
25 content in the MP4 file format to the MMSC 240. The MMSC 240 identifies the content owner by extracting the copyright notice in the udta field of the MP4 file and logs a billing event. Preferably, user B and user C are charged an additional cost for receiving the multimedia
30 content. Again, the content may comprise some video 120, audio 110, text 130, graphics, still images, etc.

- 18 -

Referring now to FIG. 5, a third scenario 500 of multimedia content consumption is illustrated. In this scenario, an MMS server 220 is again configured to route
5 (or store and route) multimedia content, for example in an MP4 file format, from an MMS client 210. However, in this scenario, the user has edited the content before forwarding it to other users.

10 In this regard, it is envisaged that the user A of MMS client 210 may edit the content for one or more of the following reasons:

- (i) Reduce the multimedia content's length,
- (ii) Send selected portions of the multimedia
15 content, for example, the video or audio portion only,
- (iii) Annotate the multimedia content,
- (iv) Add to the multimedia content,
- (v) Concatenate other content from a different source, and/or
20 (vi) Substitute parts of the content with his/her own generated content.

In the illustrated sample MP4 file 510, the user A of MMS client 220 has removed the audio portion and retained the
25 video portion 110 and original caption as well as added his/her own comments 520. The copyright notice 140 is embedded in the udta field.

It is noteworthy that the copyright notice 140 is
30 retained. Preferably, editing/authoring software on the MMS client 220 should be configured to ensure the

- 19 -

continued integrity of the copyright notice 140 upon
modification of any multimedia content. It is retained
because the authoring software only alters the video,
audio and text portions of the multimedia message and
5 should not alter other portions of the MP4 file.

Referring back to FIG. 5, the user (A) of the MMS client
210 believes that his/her edited multimedia content would
again be of interest to some other users. He/she
10 therefore forwards 214 the edited multimedia content via
232 the MMS server 220 to other MMS clients (e.g. user B
of a second MMS client 230 and user C of a third MMS
client 410).

15 The MMS server 220 also passes on 242 the edited
multimedia content in the MP4 file format to the MMSC
240. The MMSC 240 identifies the content owner(s) of the
edited multimedia content via the retained copyright
notice in the udta field of the MP4 file. The MMSC then
20 logs one or more corresponding billing events.
Preferably, user B and user C are charged an additional
cost for receiving the edited multimedia content.

In the context of any of the above scenarios, generation
25 of the billing event (as controlled by the MMSC 240) may
happen as soon as the multimedia content has passed
through the MMSC 240. Alternatively, if the network
operator prefers, the MMSC 240 may store multimedia
content messages. Then during a quiet periods or pre-
30 determined periods, such as on an hourly or daily basis,

- 20 -

the MMSC 240 may perform the billing operation subsequently off-line.

It is envisaged that the revenue generated from the
5 aforementioned billing mechanism, as applied to any of the above scenarios, may be individually collected by, or shared between, the content owner, a manufacturer of the MMS client, a licensee of the content, and/or the network operator.

10

Referring now to FIG. 6, a flowchart illustrates an operation of a 'billing module' in an MMSC in accordance with the preferred embodiment of the present invention. The process starts at step 610. The MMSC waits to
15 receive multimedia content messages sent by the MMS server, as shown in step 620. When a multimedia content message is received at the MMSC, the MMSC extracts the udta field from the MP4 file in the multimedia content message in step 630. The MMSC then makes a determination
20 as to whether the udta field contains copyright information in step 640. If the udta field does not contain copyright information, in step 640, the MMSC does not generate a billing event, and the process for that received multimedia content message finishes in step 670.

25

However, if the udta field does contain copyright information in step 640, the MMSC analyses the copyright information in step 650 in order to generate a corresponding billing event. The billing event is then
30 sent to the MMS billing server in step 660.

- 21 -

In the preferred embodiment of the present invention, the billing event consists of the entire copyright information in the udta field. However, it is within the contemplation of the invention that other billing event
5 formats or message structures could be generated and, if required, sent to a remote MMS premium service billing server.

As mentioned earlier, it is envisaged that the cost per
10 usage of the content will be very low. In this regard, any digital rights management system must be very lightweight. Furthermore, it is envisaged that the cost is so low, that it would not deter any users from accessing or distributing the multimedia content.
15 Therefore, revenue from the aforementioned billing mechanism will result from massive volume P2P distribution of the content. Preferably, the initial content download cost can also be made very low, which will further encourage use of such multimedia content
20 distribution.

Although it is envisaged that MPEG-7 metadata could be adapted to carry copyright information for triggering billing, the above preferred embodiment focuses on only
25 the content itself within an MP4 file format. Hence, and advantageously, it does not require additional information such as MPEG-7 type metadata.

It is envisaged that the aforementioned inventive
30 concepts may be applied to any wireless or fixed communication unit, such as a mobile phone, with MMS

- 22 -

capability, and/or adapting MMS servers or MMS switching
centre equipment. An example of an implementation on a
fixed terminal would be to provide similar capability
(sending and receiving multimedia messages and being
5 charged for it) on a fixed telephone, much like the SMS
service being offered on fixed telephones recently.

It is also envisaged that such concepts could be applied
to any system where it is possible to send and receive
10 multimedia messages to and from users. For example, it
is envisaged that it could be implemented on an e-mail
server, for instance, to check multimedia e-mail
attachments and bill the user accordingly.

15 It will be understood that the billing mechanism
described above, preferably when applied to multimedia
content messages, provides at least some of the following
advantages:

20 Content Providers benefit from:

(i) A simple-to-use system that enables
distribution of their multimedia content, for example, to
maintain visibility of, say, a product or performer (e.g.
a musician, a soap opera, a football championship, a
25 film),

(ii) The opportunity to profit from a revenue
generation mechanism from users accessing their
multimedia content,

(iii) Protection of valuable multimedia content,
30 whilst also being able to track who has used/accessed the
multimedia content, and

- 23 -

(iv) The content is likely to be of low intrinsic value, so that if some fraudulent forwarding of the content occurs, it is not of critical loss to the multimedia content owner.

5

Network operators benefit from:

(i) Increased airtime revenue from access to multimedia content,

(ii) A potential share of revenue from multimedia
10 content distribution, and

(iii) Maintain consumer interest in games and other applications by adding multimedia content to the systems they support.

15 Manufacturers benefit from:

(i) Increased handset and system sales by providing features that add value for operators, multimedia content owners and consumers in sharing MMS content,

(ii) Opportunities to gain a share of revenue
20 from multimedia content consumption, and

(iii) The preferred embodiment is based on the standard MP4 file format, yielding easy implementation.

(iv) Manufacturers and network Operators benefit
25 from having a system that is simple to implement and requires little additional bandwidth and CPU resources, hence reducing cost.

Consumers benefit from:

(i) A faster implementation for MMS clients to
30 receive multimedia content due to a low complexity impact

- 24 -

on handsets, as compared to waiting for the roll-out of the full and complex MPEG-21 DRM solution,

(ii) Cheap access to desirable distributable multimedia content. This results from the multimedia content likely being of limited time value as it may well be based on what is fashionable at any particular moment. Examples are envisaged to be celebrity gossip, a new music release, a film clip, highlights from a recent sporting event, a clip from a recent episode of a soap opera, etc., and

(iii) Being enabled to legitimately edit and forward multimedia content, with implicit approval from the multimedia content owner, with low fees charged for consumption and forwarding.

Whilst the specific and preferred implementations of the embodiments of the present invention are described above, it is clear that one skilled in the art could readily apply further variations and modifications of such inventive concepts.

In summary, a multimedia message billing system is described. The multimedia message billing system includes a multimedia messaging controller operably coupled to a multimedia messaging server that distributes multimedia message content. One or more multimedia messaging clients accesses or distributes the multimedia message content. The multimedia message content contains an embedded copyright notice that is extracted to trigger a billing event, which in turn is used to charge a user

- 25 -

of a multimedia messaging client for accessing, receiving or distributing the multimedia message content.

In addition, a multimedia messaging controller is
5 described. The multimedia messaging controller is operably coupled to a multimedia messaging server that distributes multimedia message content to and/or from one or more multimedia messaging clients. The multimedia messaging controller includes a processor that extracts
10 an embedded copyright notice in a multimedia message content received from the multimedia messaging server. In response to extracting a copyright notice, the processor triggers a billing event to charge the one or more users of multimedia messaging clients for accessing,
15 receiving or distributing the multimedia message content.

Furthermore, a method of billing one or more users of multimedia messaging clients that accesses, receives or distributes multimedia message content is described. The
20 method includes the steps of receiving multimedia message content from the one or more multimedia messaging clients, wherein the multimedia message content contains a copyright notice; and extracting the copyright notice from the multimedia message content. A billing event is
25 then generated to charge the one or more users of multimedia messaging clients for accessing, receiving or distributing the multimedia message content.

In this manner, a billing mechanism enables legitimate
30 accessing, distribution, editing and/or forwarding of multimedia message content, with implicit approval from

- 26 -

the content owner. Implicit approval is given as a charge can be levied on the user of the multimedia messaging client based on the extracted copyright notice.

- 5 Thus, an improved billing mechanism and method of operation have been described, wherein the aforementioned disadvantages associated with prior art mechanisms have been substantially alleviated.

- 27 -

Claims

1. A multimedia message billing system (200)
comprising:
 - 5 a multimedia messaging controller (240);
a multimedia messaging server (220), operably
coupled to said multimedia messaging controller (240),
for distributing multimedia message content (100); and
one or more multimedia messaging clients (210,
10 230, 410) accessing or distributing said multimedia
message content (100);
the multimedia message billing system (200) characterised
by said multimedia message content (100) containing an
embedded copyright notice (140) that is extracted to
15 trigger a billing event to charge a user of a multimedia
messaging client (210, 230, 410) for accessing, receiving
or distributing said multimedia message content (100).
2. The multimedia message billing system (200)
20 according to Claim 1, further characterised by said
copyright notice (140) being embedded within an MP4 file
format of said multimedia message content (100).
3. The multimedia message billing system (200)
25 according to Claim 2, further characterised by said
copyright notice (140) being embedded within a user-data
atom field of said MP4 file format.
4. The multimedia message billing system (200)
30 according to any preceding Claim, further characterised

- 28 -

by said multimedia messaging server (220) supporting peer-to-peer multimedia message content distribution.

5. The multimedia message billing system (200)
5 according to any preceding Claim, further characterised
by said multimedia messaging server (220) forwarding said
multimedia message content (100) to said multimedia
messaging controller (240), such that said multimedia
messaging controller (240) extracts said copyright notice
10 (140) from said multimedia message content (100) to
trigger said billing event.

6. The multimedia message billing system (200)
according to any preceding Claim, further characterised
15 by a multimedia message billing server (260), operably
coupled to said multimedia messaging controller (240),
for receiving said billing event to effect said charge to
said user of multimedia messaging client (210, 230, 410)
for accessing, receiving or distributing said multimedia
20 message content (100).

7. The multimedia message billing system (200)
according to any preceding Claim, further characterised
by the copyright notice (140) including one or more of
25 the following details: a multimedia content owner (142),
a Year (144), a Serial number (146) or a Checksum (148).

8. The multimedia message billing system (200)
according to Claim 7 when dependent upon claim 6, further
30 characterised by said multimedia message billing server
using said copyright notice to levy a charge to said user

- 29 -

of multimedia messaging client (210, 230, 410) for
accessing, receiving or distributing said multimedia
message content (100) and/or assigning said charge to an
entitled party, for example an owner of said multimedia
5 content (100).

9. The multimedia message billing system (200)
according to any preceding Claim, further characterised
by said copyright notice (140) comprising multiple
10 copyright atoms, for example multiple copyright atoms
using different language codes.

10. The multimedia message billing system (200)
according to any preceding Claim, further characterised
15 by said multimedia messaging server (220) parsing a
multimedia message content (100) bit stream to identify
only said copyright notice.

11. The multimedia message billing system (200)
20 according to any preceding Claim further characterised by
said multimedia message content (100) being provided by
said multimedia messaging server or one or more of said
multimedia messaging clients (210, 230, 410).

25 12. The multimedia message billing system (200)
according to Claim 11, wherein said multimedia message
content (100) is provided by one or more of the
multimedia messaging clients (210, 230, 410), the
multimedia message billing system (200) further
30 characterised by an integrity of said copyright notice
(140) being maintained for subsequent billing purposes

- 30 -

when said one or more of the multimedia messaging clients (210, 230, 410) modifies said multimedia message content (100).

5 13. The multimedia message billing system (200) according to Claim 12, wherein said one or more of the multimedia messaging clients (210, 230, 410) modifies said multimedia message content (100) to effect one or more of the following:

- 10 (i) Reduce said multimedia message content's length,
- (ii) Send selected portions of said multimedia message content (100), for example, a video or audio portion only,
- 15 (iii) Annotate said multimedia message content (100),
- (iv) Add to said multimedia message content (100),
- (v) Concatenate other content from an alternative source, and/or
- 20 (vi) Substitute one or more portions of the multimedia content with user generated content.

14. The multimedia message billing system (200) according to any preceding Claim, further characterised
25 by said billing event being triggered in a time-based manner or in response to said multimedia message content (100) passing through said multimedia messaging controller (240).

- 31 -

15. A multimedia messaging server (220) adapted to operate in the multimedia message billing system (200) according to any of the preceding Claims.

5 16. A multimedia message billing server (260) adapted to operate in the multimedia message billing system (200) according to any of preceding Claims 1 to 14.

10 17. A multimedia messaging controller (240) adapted to operate in the multimedia message billing system (200) according to any of preceding Claims 1 to 14.

18. A multimedia messaging controller (240) operably coupled to a multimedia messaging server (220) that
15 distributes multimedia message content (100) to and/or from one or more multimedia messaging clients (210, 230, 410);
the multimedia messaging controller (240) characterised by a processor extracting an embedded copyright notice in
20 a multimedia message content (100) received from said multimedia messaging server (220) wherein said processor triggers a billing event to charge said one or more users of multimedia messaging clients (210, 230, 410) for
accessing, receiving or distributing said multimedia
25 message content (100).

19. A method of billing one or more users of multimedia messaging clients for accessing, receiving or distributing multimedia message content (600), the method
30 characterised by the steps of:

- 32 -

receiving multimedia message content from said
one or more multimedia messaging clients, wherein said
multimedia message content contains a copyright notice;

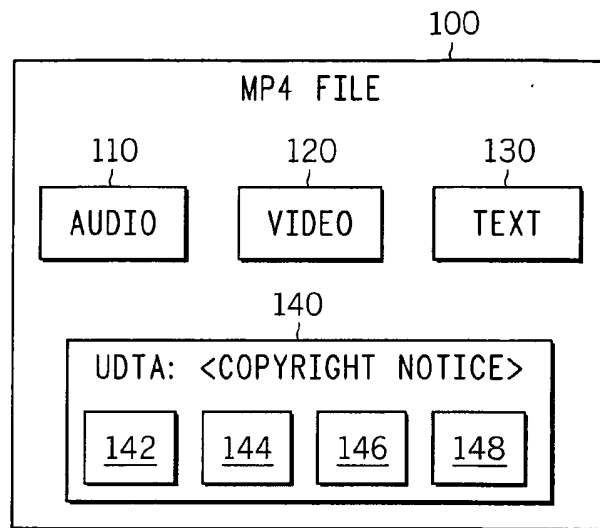
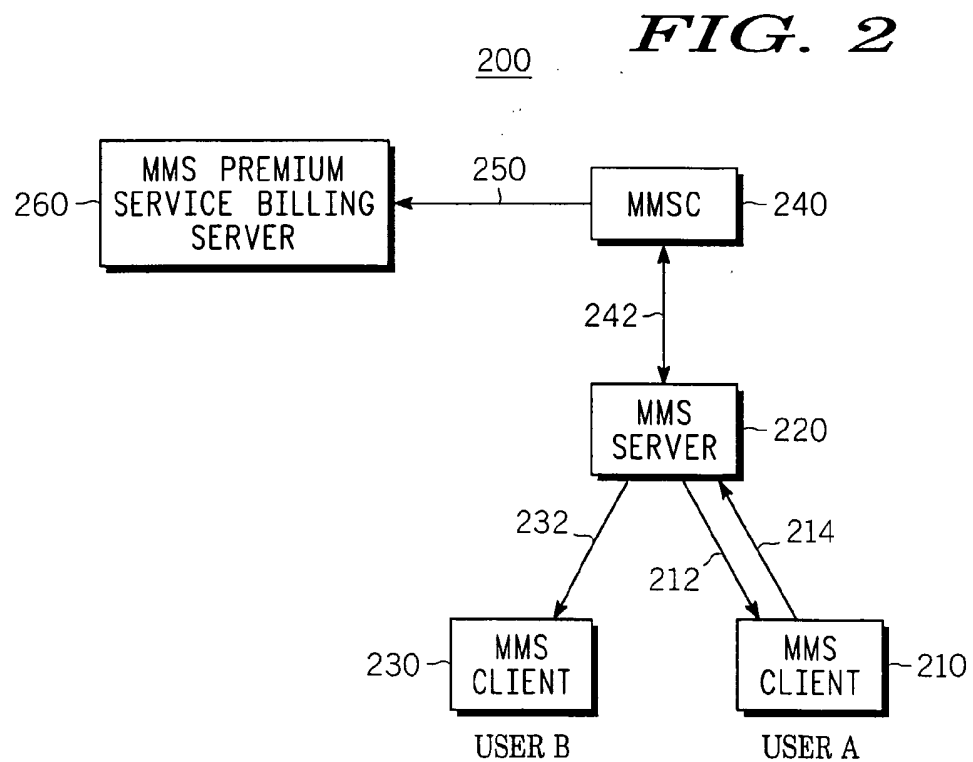
extracting (630) the copyright notice from said
5 multimedia message content; and

generating a billing event, to charge said one or
more users of multimedia messaging clients for accessing,
receiving or distributing said multimedia message
content.

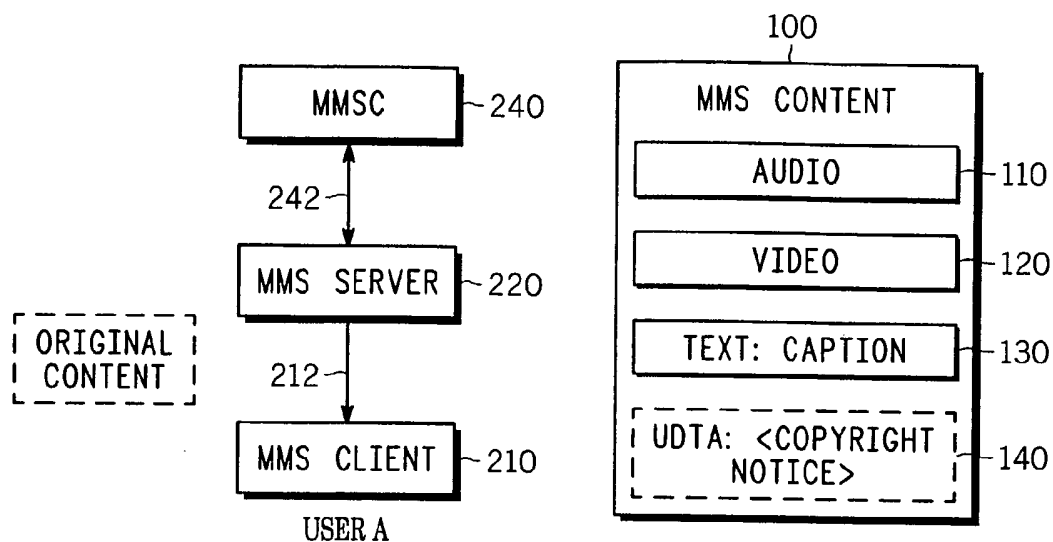
10

20. A storage medium storing processor-implementable
instructions for controlling a processor to carry out the
method of Claim 19, or facilitate an operation of the
multimedia messaging controller (240) of Claim 18.

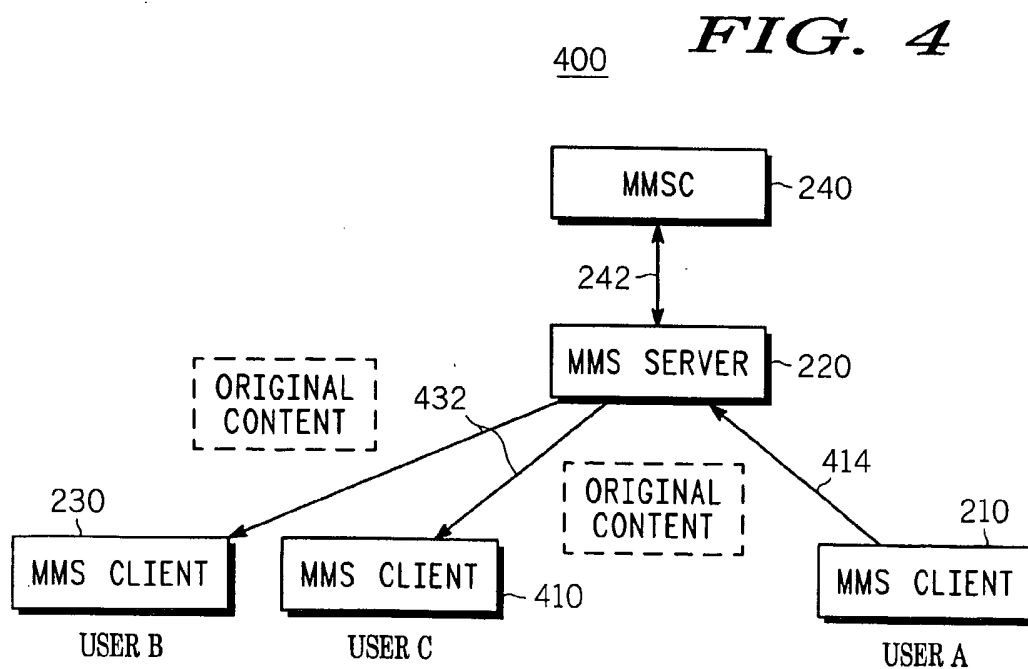
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*FIG. 1**FIG. 2*

2/4

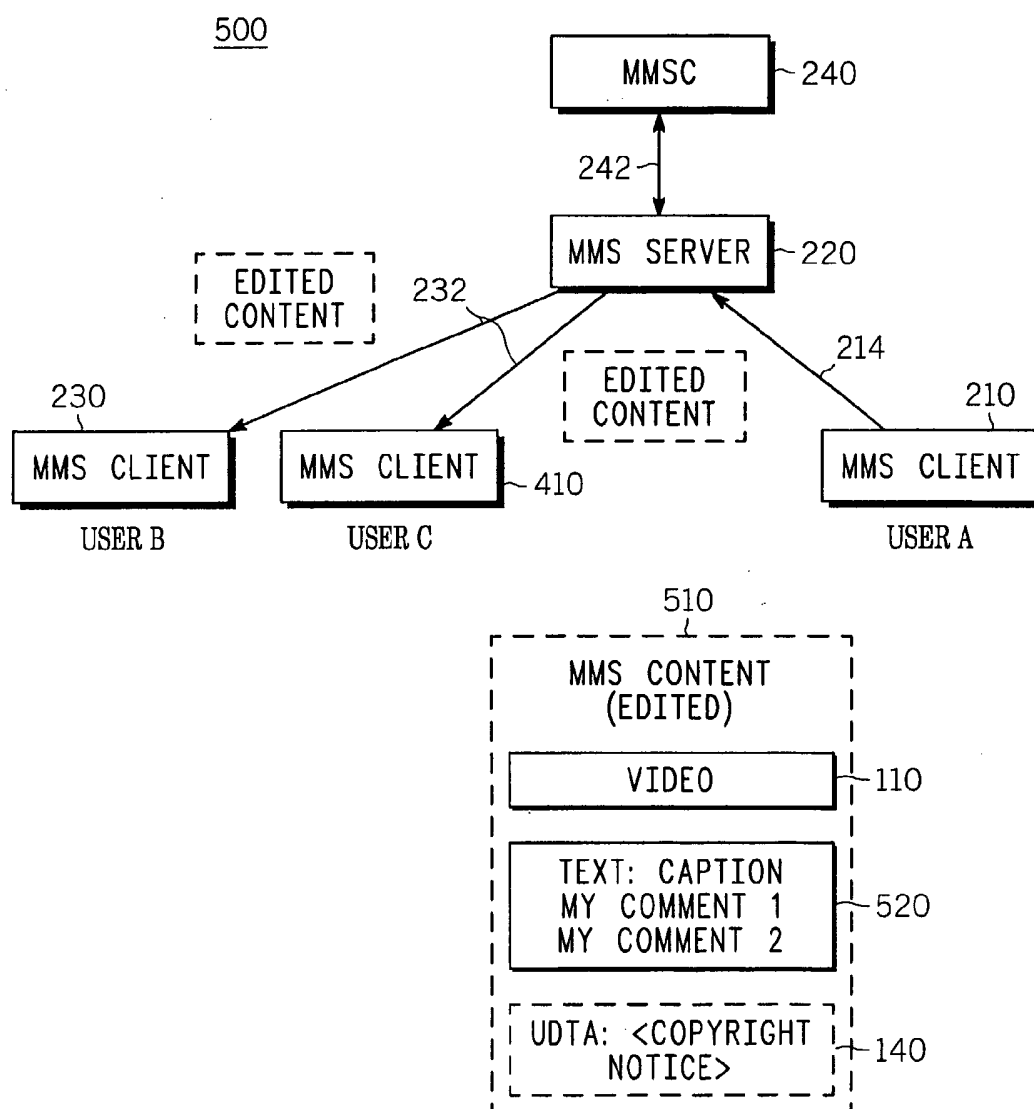
**FIG. 3**

300

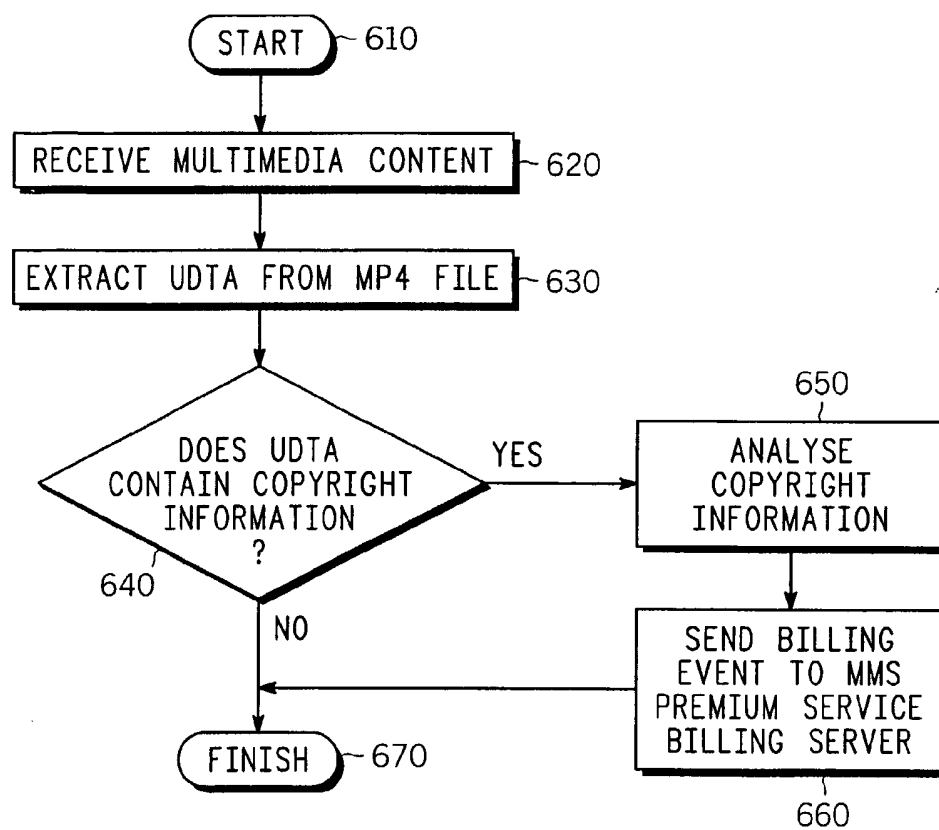


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3/4

FIG. 5

4/4

**FIG. 6**600