

## TRANSMISSION OF MMS MESSAGES WITH THE CONVERSION OF DATA TYPES AND/OR DATA FORMATS

### BACKGROUND OF THE INVENTION

[0001] The use of the term data in the present invention includes all types of information that can be compiled from the individual components. The individual components or elements can be structured, organized and/or coded according to different standards. Accordingly, data can represent multimedia messages that include diverse elements with different standards.

[0002] Methods and apparatus for transferring various data types or formats are known. For example, in addition to voice telephony, a mobile radio system as per the Global System for Mobile Communications Standard GSM already offers the option of sending or receiving information in the form of text messages up to 160 characters long. This service is known as the Short Message Service SMS.

[0003] For next-generation mobile radio systems, such as the Universal Mobile Telecommunication System UMTS, a multimedia-capable version of the mobile messaging service is currently being standardized. This service is known as the Multimedia Messaging Service MMS. The Multimedia Messaging Service MMS specifies mechanisms to transport various content from one subscriber of the service via a network to another subscriber. In this document, messages with multimedia content will be known simply as multimedia messages MM to better differentiate them from SMS text messages. By contrast with the SMS, there is no restriction to pure text content with the Multimedia Messaging Service MMS. In the MMS, it also will be possible to format texts however desired and to embed any content in a message. This includes audio and video content, graphics and text. The individual multimedia components of a multimedia message, also known as MM elements, also may contain references to other data known as links. Data referenced in this way either can be integrated into the multimedia message MM as an additional MM element or can be stored in external memory space for downloading later; for example, on a server in a network.

[0004] The disclosure below refers, in general, to data quantities having individual elements of text and/or image data with or without sound that are coded to the same or different standards even though the application of the aforementioned standard is a key area of application for the present invention.

[0005] A communication system for transmitting this type of data essentially includes three layers: a layer of a data sender with an MMS user application or an MMS user agent, a layer of at least one service provider whose network element triggers the service and is hereinafter referred to as an MMS connection unit or MMS relay/server, and a layer of a receiver with an appropriate MMS user application. The term MMS user application covers an application on both the sender and receiver side; for example, on a mobile phone that implements MMS functionality.

[0006] Usually, a mobile phone equipped with an MMS user application does not support all the existing data types or data formats. Current developments indicate a greater number of different data formats for various special appli-

cations that in the future may be of interest as elements of a multimedia message. Upgrading all subscriber terminals can practically be excluded due to the high numbers involved and the high software maintenance intervals dictated by development. It can be assumed that an MMS user application in a subscriber terminal therefore can only ever process a selection of the growing number of different data formats. The information as to which data types and data formats are supported by a particular MMS user application (in addition to other individual features of the MMS user application) is part of the MMS user application profile or MMS user agent profile that has to be known to the MMS service provider before multimedia messages can be exchanged. For this purpose, the information is transferred at the beginning of every MMS session from the appropriate terminal to the network and stored there. Given that the information from the MMS user application profile is known to the MMS relay/server of the MMS service provider, this enables it to undertake data type conversions/code conversions and file format conversions. Only those data types and data formats are then forwarded to a MMS user application that it can process. If an MMS relay/server receives a multimedia message that includes two MM elements, where the first MM element contains a link to the second MM element and the data type or data format of the second MM element has to be converted before the multimedia message is forwarded to the recipient in accordance with the information from the MMS user agent profile, then the link in the first MM element is errored after the conversion and no longer can be resolved.

[0007] The present invention is directed toward a method, a sender and/or receiver terminal, a computer program product and a communications system that provides a data or message sender additional options for sending data with a higher degree of flexibility with error-free adaptation for every combination of data and data formats to a given communication system and/or MMS user application.

### SUMMARY OF THE INVENTION

[0008] A method according to the present invention for transmitting data in a communication system, in particular transmitting text and/or image data with or without sound that is coded to the same or different standards, is characterized in that data type and/or data format conversion is undertaken in accordance with a profile of a receiver in which a link is changed appropriately to preserve the validity of this link in the data and/or between different data elements of the data type and/or data format conversion. In other words, when converting a data type and/or data format in accordance with a profile of a receiver to preserve the validity of one or more references in the data between different data elements, at least one link is updated. According to the present invention, it is therefore possible as a result of an automatic link update after a data type and/or data format conversion that internal references remain valid even after conversion of data types and/or data formats and that a multimedia message can always be completely displayed to the receiver in adapted form as per the sender's requirements. According to the present invention, both internal and external references are considered, as is described in an embodiment with reference to the accompanying figures.

[0009] In a further development of the present invention, the conversion is undertaken at the provider of the receiver.