

RENDERING ELECTRONIC PRESENTATIONS TO PRINTED SURFACE

FIELD OF THE INVENTION

[0001] This invention relates generally to electronic presentations and particularly to printing such a presentation.

BACKGROUND OF THE INVENTION

[0002] Multimedia messaging is a modern and prominent service used in mobile terminals. The multimedia messaging is part of evolution of mobile communication, wherein voice-based calls and text-based short messages are advanced into messaging of several different media types. Use of multimedia messages enables a variety of different services. The services are continuously developing due to different electronic applications. The multimedia capable terminals and services are gaining speed with the current introduction of camera phones in market

[0003] Although the electronic communication between terminals is effective, combining it with traditional communication results in significant market benefits. As one example a postcard service can be presented, where the user is capable of ordering a postcard via e.g. SMS (Short Message Service), WAP (Wireless Application Protocol), Internet from a service supplier, wherein a paper copy of said postcard is delivered to the recipient. One of the new services is a postcard service where the user sends an message to a service supplier via MMS (Multimedia Messaging Service) where in the service the message is printed as physical postcard and delivered to the recipient. The content of the message can then be e.g. a self-photographed image.

[0004] The presentation of the multimedia message is controlled by SMIL (Synchronized Multimedia Integration Language), which is a mark-up language akin to HTML (Hyper-text Mark-up Language) and XML (Extensible Mark-up Language). SMIL presentation is a mandatory component of the multimedia messages. The SMIL is used for programming even complex multimedia presentations to be composed and presented to the end user. SMIL defines a structure for the presentation comprising a multimedia files, which can be text, sound, images, video, animation, etc. or a combination thereof. Layout of a SMIL-presentation is divided into different regions, each of which can be contained of different multimedia content. The structure resembles that of a slide presentation application or similar presentations. The SMIL presentations contain spatial aspects (e.g. where an image is located on the display), temporal aspects (e.g. how long an image is visible on its location) and interaction aspects (e.g. by actuation of which key an image becomes visible).

[0005] The need for printing images via MMS is increasing. The service suppliers offer general printing services, such as photo kiosks for printing them. The user sends the image through MMS to the service supplier who prints it to the paper. When the paper photos are ready the service supplier informs the customer e.g. by SMS that the photos are ready/available to be picked up. Applicant's former publication WO 01/97504A1 "Messaging service system and a method to be performed in such a system" presents one example of a method for printing images via MMS.

[0006] If the presentations are rendered to a fixed, unalterable surface, e.g. printed to the paper, some of the presentation components are not applicable, especially those that control the temporal and interaction aspects of the presentation. This problem arises also if one wants to print out a multimedia message. The problems to be solved are how the necessary information is extracted from the message and how the images are placed into the print.

SUMMARY OF THE INVENTION

[0007] The present invention defines how an electronic presentation, e.g. multimedia message using e.g. SMIL mark-up language can be rendered to a printed surface. The invention also describes how the current invention is applied to an older MMS SMIL version.

[0008] One aspect of the current invention is to form at least one printable output, such as a variable-sized paper, a postcard, a facsimile, from an electronic presentation, e.g. multimedia message, comprising at least one event. An "event" in this description corresponds to a time the object appears in the presentation, in other words, an onset of the object. A term "object" refers to any multimedia element being delivered in a message carrying multimedia elements. Multimedia element can be an image element, a text element, an interaction element, a video element, an audio element etc.

[0009] The printable output can be formed by defining a temporal aspect of said at least one event, whereby said printable output comprising said event, is formed based on that definition. This means that the electronic presentation is analyzed in time, whereby as many events there are (multimedia) objects in the message are analyzed.

[0010] Additional feature of the current invention is to study a spatial aspect of each event by defining the location of the event in relation to the layout of the presentation and then combine events into one output, if their layout locations differ from another, and otherwise keep them on separate outputs. The events locating substantially on the same layout location are further studied by their temporal aspect, and that event, which is temporally closer—than those other events sharing the same layout location—to the combined events is also added to the combined output. Sometimes, if the location of the objects matches, but the space required by the objects differs, wherein the objects are partially overlapping, further study may be done. In this case the temporal study, as mentioned above, can be done, wherein the temporally closer object is combined. It is also possible to combine the temporally further but bigger object.

[0011] In conclusion, there will result, depending on the use, one or many outputs which are then printed. The printed output, referred as printout, can be a paper printout or a file printout. The layout of one output can be formed similarly to the presentation and scaled to the size of the printout. Naturally, it is also possible to place several outputs on one or many printout. FIG. 1 recapitulates the principle of the invention.

[0012] The invention relates to a method for printing an electronic presentation, a device for use in a printing of an electronic presentation as well as a system for printing of an electronic presentation. The invention relates also to components for forming at least one printable output from an