

Method Of Enabling An Electronic Version Of A Publication With Interactive Content

TECHNICAL FIELD OF INVENTION

5 [001] The following discloses a method of enabling an electronic version of a publication with interactive content and a computing device for realising this method.

BACKGROUND

10 [002] While traditional publication uses printed static content to convey information, an electronic publication allows for interactive elements to be added as an additional means to convey the same content, sometimes more effectively than the static approach.

 [003] Interactivity on electronic publications, such as an eMagazine or an eBook may be created using Adobe® eBook platform or any online publishing platform. Existing platforms and software require for an entire page of a publication to be ready before interactive elements can be added. In more detail, the layout of the page must already be in place before interactive elements can be added over relevant portions of the page. The page position within the book (i.e. page number) must also be fixed before final processing for electronic publication or e-publishing. All interactive elements have to be added manually to each page. Once the interactive elements are added, the entire page is processed with the rest of its pages to create a complete publication (such as an eBook or an eMagazine) which is ready for release.

25 [004] The above current method of adding interactive elements for e-publishing is especially unsuited for daily electronic newspaper (or e-newspaper publishing) as the content of the newspaper is often finalised only just before the newspaper is released for printing, and subsequently distributed to the public. The initial position of content, such as advertisement, is sometimes moved throughout the day to make way for developing news and breaking news just before final pagination and off stone (the moment at which an edition of a newspaper is finalised for printing and no further changes can be made). That is, interactive elements can only be added after each page of the newspaper has been finalised for printing, which can be around midnight, so as to have the newspaper ready for public distribution by early morning. Interactive graphic designers will thus only

have a few hours to work on the finalised pages between midnight and press printing to embed interactive elements on the electronic version of the newspaper.

[005] The following discloses computing devices and a method that addresses the above identified shortcoming of existing methods to embed
5 interactive elements into a publication.

SUMMARY

[006] According to a first aspect of the invention, there is provided a method
10 of enabling an electronic version of a publication with interactive content, the method comprising: compiling a template that facilitates production of the electronic version of the publication and a printed version of the publication; receiving a document with interactive content; comparing the received document against each article in the template to identify an article comprising content that matches the received
15 document; pairing the matching content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display of the paired interactive content when the electronic version of the publication is viewed; and configuring the template and the paired interactive content for assembly into the electronic version of the publication, wherein the
20 electronic version of the publication comprises static content from the template and wherein the static content of the electronic version of the publication is the same as that of the printed version of the publication.

[007] According to a second aspect of the invention, there is provided a
non-transitory computer readable medium having stored thereon executable
25 instructions for controlling a server to perform steps comprising compiling a template that facilitates production of an electronic version of a publication and a printed version of the publication; receiving a document with interactive content; comparing the received document against each article in the template to identify an article comprising content that matches the received document; pairing the matching
30 content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display of the paired interactive content when the electronic version of the publication is viewed; and configuring the template and the paired interactive content for assembly into the electronic version of the publication, wherein the electronic version of the publication comprises static

content from the template and wherein the static content of the electronic version of the publication is the same as that of the printed version of the publication.

[008] According to a third aspect of the invention, there is provided a server comprising a transmitter configured to transmit an application to a mobile device for execution of the application in the mobile device to open an electronic version of the publication created by the method of the first aspect of the invention.

[009] According to a fourth aspect of the invention, there is provided a method of enabling an electronic version of a publication with interactive content, the method comprising: receiving a document with the interactive content; comparing the received document against each article in a template that facilitates production of the electronic version of the publication to identify an article in the template comprising content that matches the received document; and pairing the matching content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display of the paired interactive content when the electronic version of the publication is viewed.

[010] According to a fifth aspect of the invention, there is provided a server for enabling an electronic version of a publication with interactive content, the server comprising: at least one processor; and at least one memory including computer program code; the at least one memory and the computer program code configured to, with the at least one processor, cause the server at least to: compile a template that facilitates production of the electronic version of the publication and a printed version of the publication; receive a document with the interactive content; compare the received document against each article in the template to identify an article comprising content that matches the received document; pair the matching content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display of the paired interactive content when the electronic version of the publication is viewed; and configure the template and the paired interactive content for assembly into the electronic version of the publication, wherein the electronic version of the publication comprises static content from the template and wherein the static content of the electronic version of the publication is the same as that of the printed version of the publication.

BRIEF DESCRIPTION OF THE DRAWINGS

[011] Embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

5 [012] Figure 1 shows a schematic of various stages of an existing process that leads to release of both a printed version of a publication and an electronic version of the publication.

[013] Figure 2A shows a schematic of various stages of an enhancement, in accordance with a first implementation of the present invention, of the process shown in Figure 1.

10 [014] Figure 2B shows a schematic of various stages of an enhancement, in accordance with a second implementation of the present invention, of the process shown in Figure 1.

[015] Figure 3 shows a process where image recognition is used to locate an article for integration of interactive content therein.

15 [016] Figure 4 shows a process to have an electronic version of a publication enabled with interactive content.

[017] Figure 5 shows a flow chart of aspects in the process shown in each of Figure 2A and Figure 2B to enable an electronic version of a publication to have interactive content.

20 [018] Figure 6 shows a flow chart of aspects in the process shown in each of Figure 2A and Figure 2B to enable an electronic version of a publication to have interactive content.

[019] Figure 7 depicts an exemplary computing device configured to enable an electronic version of a publication to have interactive content.

25 [020] Figure 8 shows pictures of exemplary interactive content in an electronic version of a publication produced in accordance with the process of Figure 2A or Figure 2B.

DETAILED DESCRIPTION

30 [021] In the following description, various embodiments of the invention are described, by way of example only, with reference to the drawings, where like reference characters generally refer to the same parts throughout the different views.

[022] Figure 1 shows a schematic of various stages 124, 126, 126a and 128 of an existing process 100 that leads to release of both a printed version 118 of a publication (hereafter interchangeably referred to as the printed version 118) and an electronic version 120 of the publication (hereafter interchangeably referred to as the electronic version 120). It will be appreciated that Figure 1 only shows the stages that are concerned with the present invention, whereas the production of the publication 122 involves more stages which are not shown for the sake of simplicity. The publication 122 refers to any writing (in the form of text and/or images) that serves to convey information. The publication 122 may include any one or more of a newspaper (such as "The Straits Times®" published by Singapore Press Holdings Limited® or "The Wall Street Journal®" published by Dow Jones & Company), a magazine (such as Elle®, Newsweek® or Time®), a bulletin, journal, a book, or a flyer.

[023] At stage 124, any party 102 (such as an advertising agency), which wants to place content (such as an advertisement or a notification) into the publication 122, submits 104 such content to a media company 110. Similarly, employees (such as journalists) 106 of the media company 110 or any commissioned person(s) of the media company 110 also submit 108 their content (such as news reports, interviews) to the media company 110.

[024] In stage 126, the submitted content is arranged, at the media company 110, into a template 114. This template 114 may have a predesigned, customized format or its format may be determined by the space that each of the submitted content 104 and 108 occupies. The template 114 demarcates or assigns a placement for each article in the publication 122, the article designating an area or space for each of the submitted content 104 and 108 in the publication 122. This arrangement is performed using one or more computer systems 112. During this arrangement, pagination occurs, i.e. the page on which each of the articles appears is determined. The template 114, after undergoing pagination, can be used to produce the printed version 118, which occurs at stage 128. . Also at stage 128, the template 114 can be used to produce the electronic version 120 (indicated using the arrow 150), which is the case if the electronic version 120 of the publication 122 does not contain interactive content.

[025] Stage 126a occurs in the event that interactive elements are to be added (indicated using the arrow 152) by one or more designers 112a to one or more articles in each page in the template 114. This leads to another template 114a from which the electronic version 120 is produced in stage 128.

5 [026] At stage 128, the publication 122 is then released to the public. This is done by sending the template 114 to a printing press 116 to produce the printed version 118. The electronic version 120 of the publication 122 is also electronically published, for example by making the electronic version 120 available on a website that is hosted by the media company 110.

10 [027] The present invention modifies the existing process 100 shown in Figure 1 as follows.

[028] Figure 2A shows a schematic of various stages 224, 226, 226a and 228 of a process 200 in accordance with a first implementation of the present invention. The process 200 involves the same parties as the process 100 of Figure 1, namely a party 102 which wants to place content into a publication 122 circulated by media company 110; employees or commissioned person(s) 106 that write for the media company 110; and the media company 110 which receives the content from the parties 102 and 106. The media company 110 also uses one or more computer systems 112 to produce the publication 122 in both its printed version 118 (hereafter interchangeably referred to as the printed version 118) and its electronic version 120 (hereafter interchangeably referred to as the electronic version 120).

15 [029] The process 200 enables the electronic version 120 of the publication 122 with interactive content as follows. Interactive content refers to material (such as text or images) that can change to display different material (such as different text, different images, an animation, a video file or an audio file). The interactive content may be dynamic wherein this change occurs automatically (such as after a predefined time interval) and without external intervention. The interactive content may also be responsive, i.e. the change occurs from external intervention (such as a user touching the interactive content), whereby the extent of the change may depend on the input from the user. In this disclosure, "interactive content" is used interchangeably with the term "interactive elements".

20 [030] At stage 224, the parties 102 and 106 respectively submit 104 and 108 their content to the media company 110, similar to the stage 124 of Figure 1.

However, at stage 224, the party 102 can also submit 204 a document 232 with the interactive content. The document 232 may be a later version of an earlier document that is part of the content in the submission 104 by the party 102, so that one or more computer systems 112 will then update the interactive content, if any, of the earlier document with the interactive content of the later document 232. Thus, the process 200 allows for the party 102 to make design changes to the interactive content that was earlier submitted or add interactive content should there have been none in the earlier submission 104.

[031] At stage 226, a template 114 is compiled by a computer 112a of the one or more computer systems 112. This template 114 is similar to the template 114 of stage 126 of Figure 1 in that both templates 114 of Figures 1 and 2A facilitate the production of the electronic version 120 of the publication 122 and the printed version 118 of the publication 122. In Figure 1, the template 114 is used by one or more designers 112a to create the template 114a from which the electronic version 120 of the publication 122 is produced. However, in Figure 2A, the electronic version 120 of the publication 122 is produced from the template 114, i.e. the template 114 does not need to be worked upon by one or more designers in order to be able to result in the creation of the electronic version 120 having interactive content. The process 200 of Figure 2A is still able to do so as follows.

[032] For publications that contain time sensitive material, such as daily newspapers, the initial layout of the template 114 often changes, especially when a news report of headline material is received just before preparations to release the publication 122 are finalised. The pagination of the template 114 has therefore to be changed, since such news reports are generally placed in a more prominent location and also on the starting pages of the publication 122.

[033] The template 114 is an electronic file of several pages, with each page having articles that contain the submitted content 104. These articles act as a placeholder or anchor onto which a computer 112b of the one or more computer systems 112 maps the material with the interactive content present in the document 232 received in stage 224 by the computer 112a of the one or more computer systems 112. Thus, even when the articles which are meant to have interactive content are moved because of, for example, the above mentioned receipt of the news report of headline material, the content of these articles are unaffected. The

articles are therefore still able to act as a placeholder. This placeholder effect allows the computer 112b of the one or more computer systems 112 to compare the document 232 received by the computer 112a against each article in the template 114 to identify an article comprising content that matches the received document 232.

[034] The process 200 thus allows for interactive elements to be included any time after they are created. The author of the interactive content does not need to know the final position of, for example, their advertisements/images on a page of the electronic version 120 or even the page number on which their advertisements/images appear. The process 200 thus enables interactive elements to be added on the fly regardless of the placement and position of the advertisements or any images within the electronic version 120, such as e-newspapers, e-books, or e-magazines.

[035] The matching of content in each article in the template 114 to the received document 232 entails locating an article in the template 114 having content that corresponds or tallies with the content in the received document 232. This matching is done in stage 226a. In one implementation, the content in an article is determined to match the received document 232 if the static content of the received document 232 resembles the static content of the article in the template 114. That is, matching is performed using only a portion of the data present in either the article in the template 114 or the received document 232. The interactive content is not used. In another implementation, identification of the matching content in the article in the template 114 to the received document 232 is performed by image recognition. It is also possible that the identification of the matching content in the article in the template 114 to the received document 232 is performed by locating at least one marker in either each article in the template 114 or the received document 232. The article in the template 114 or the received document 232 may have any one or more of text or graphic. Text includes any one or more of letters, words and phrases, while graphic includes any one or more of pictures or images.

[036] The matching content in the article is then associated with the interactive content from the received document 232 by pairing the matching content in the article with the interactive content from the received document 232 to obtain paired interactive content 254. Such pairing occurs if the computer 112b of the one

or more computer systems 112 detects that there is a difference between the matching content in the article and the received document 232. For example, if the article within the template 114 that contains the matching content is entirely composed of static content; or if the article within the template 114 that contains the matching content has interactive content that is different from that of the received document 232, then the pairing occurs so as to enable the article within the template 114 with the interactive content of the received document 232. On the other hand, if the computer 112b detects that there is no difference between the matching content in the article and the received document 232, no pairing is done. For example no pairing is performed, if the article within the template 114 that contains the matching content already has interactive content that is the same as that of the received document 232. This pairing enables display of the paired interactive content 254 when the electronic version 120 of the publication 122 is viewed. One way in which this pairing is performed to obtain the paired interactive content 254 is described later with reference to Figures 3 and 4, whereby the paired interactive content 254 is programmed to be superimposed over the matching content in the article in the template 114.

[037] The template 114 and the paired interactive content 254 are then configured for assembly into the electronic version 120 of the publication 122. In the first implementation shown in Figure 2A, this configuration is performed at stage 228, where the paired interactive content 254 and the template 114 are hosted as separate documents on a website maintained by the media company 110. The electronic version 120 of the publication 122 is assembled from the hosted template 114 and the hosted paired interactive content 254 by, for example, having both documents downloaded into a mobile device (such as a smart phone) running an application that is configured to open them. At stage 228, the template 114 is sent to a printing press 116 to produce the printed version 118. Thus, at stage 228, both the printed version 118 and the electronic version 120 of the publication 122 are produced for release to the public. The electronic version 120 of the publication 122 comprises static content from the hosted template 114, wherein the static content of the electronic version 120 of the publication 122 is the same as that of the printed version 118 of the publication 122.

[038] While Figure 2A shows that the process 200 is executed by two computers 112a and 112b, it will be appreciated that the process 200 can entirely be executed by a single computer system. That is, one computer can compile the template 114; receive the document 232 with the interactive content; compare the received document 232 against the template 114 to identify matching content in the template 114; pair the matching content in the template 114 with the interactive content; and host the template 114 and paired interactive content 254 for production of the electronic version 120 of the publication 122.

[039] Figure 2B shows another exemplary implementation of the present invention to modify the existing process 100 shown in Figure 1.

[040] Figure 2B shows a schematic of various stages 224, 240 and 228 of a process 250 in accordance with a second implementation of the present invention. The process 250 involves the same parties as the process 100 of Figure 1, namely a party 102 which wants to place content into a publication 122 circulated by media company 110; employees or commissioned person(s) 106 that write for the media company 110; and the media company 110 which receives the content from the parties 102 and 106. The media company 110 also uses one or more computer systems 112 to produce the publication 122 in both its printed version 118 (hereafter interchangeably referred to as the printed version 118) and its electronic version 120 (hereafter interchangeably referred to as the electronic version 120).

[041] The process 250 enables the electronic version 120 of the publication 122 with interactive content as follows.

[042] At stage 224, the parties 102 and 106 respectively submit 104 and 108 their content to the media company 110, similar to the stage 124 of Figure 1. However, at stage 224, the party 102 can also submit 204 a document 232 with the interactive content. The document 232 may be a later version of an earlier document that is part of the content in the submission 104 by the party 102, so that the one or more computer systems 112 will then update the interactive content, if any, of the earlier document with the interactive content of the later document 232. Thus, the process 250 allows for the party 102 to make design changes to the interactive content that was earlier submitted or add interactive content should there have been none in the earlier submission 104.

[043] At stage 240, a template 214 is compiled. This template 214 is similar to the template 114 of stage 126 of Figure 1 in that the template 214 facilitates the production of the electronic version 120 of the publication 122 and the printed version of the publication 122. However, the difference lies in the manner in which this template 214 is produced in stage 240.

[044] As mentioned above with respect to Figure 2A, for publications that contain time sensitive material, such as daily newspapers, the initial layout of the template 214 often changes, especially when a news report of headline material is received just before preparations to release the publication 122 are finalised. The pagination of the template 214 has therefore to be changed, since such news reports are generally placed in a more prominent location and also on the starting pages of the publication 122.

[045] The template 214 is an electronic file having several pages, with each page having articles that contain the submitted content 104. These articles act as a placeholder or anchor onto which the one or more computer systems 112 map the material with the interactive content present in the document 232 received in stage 224. Thus, even when the articles which are meant to have interactive content are moved because of, for example, the above mentioned receipt of the news report of headline material, the content of these articles are unaffected. The articles are therefore still able to act as a placeholder. This placeholder effect allows the one or more computer systems 112 to compare the received document 232 against each article in the template 214 to identify an article comprising content that matches the received document 232.

[046] Similar to Figure 2A, the process 250 thus allows for interactive elements to be included any time after they are created. The author of the interactive content does not need to know the final position of, for example, their advertisements/images on a page of the electronic version 120 or even the page number on which their advertisements/images appear. The process 250 thus enables interactive elements to be added on the fly regardless of the placement and position of the advertisements or any images within the electronic version 120, such as e-newspapers, e-books, or e-magazines.

[047] The matching of content in each article in the template 214 to the received document 232 entails locating an article in the template 214 having content

that corresponds or tallies with the content in the received document 232. This matching is done in stage 240. In one implementation, the content in an article is determined to match the received document 232 if the static content of the received document 232 resembles the static content of the article in the template 214. That is, matching is performed using only a portion of the data present in either the article in the template 214 or the received document 232. The interactive content is not used. In another implementation, identification of the matching content in the article in the template 214 to the received document 232 is performed by image recognition. It is also possible that the identification of the matching content in the article in the template 214 to the received document 232 is performed by locating at least one marker in either each article in the template 214 or the received document 232. The article in the template 214 or the received document 232 may have any one or more of text or graphic.

[048] The matching content in the article is then associated with the interactive content from the received document 232 by pairing the matching content in the article with the interactive content from the received document 232 to obtain paired interactive content 254. In Figure 2B, the pairing is done by, for example, substituting the matching content in the article in the template 214 with the interactive content from the received document 232. This substitution may be performed by integrating or merging the interactive content into the article containing the matching content. Such pairing occurs if the one or more computer systems 112 detects that there is a difference between the matching content in the article and the received document 232. If the one or more computer systems 112 detect that there is no difference between the matching content in the article and the received document 232, there is then no update to the template 214. This pairing enables display of the paired interactive content 254 when the electronic version 120 of the publication 122 is viewed.

[049] The template 214 and the paired interactive content 254 are then configured for assembly into the electronic version 120 of the publication 122. In the second implementation shown in Figure 2B, this configuration is performed at stage 228, where the paired interactive content 254 and the template 214 are stored as a single document, with the template 214 containing the paired interactive content 254 being hosted on a website maintained by the media company 110. The electronic

version 120 of the publication 122 is assembled from the hosted template 214 by, for example, having the hosted template 214 downloaded into a mobile device (such as a smart phone) running an application that is configured to open the hosted template 214. At stage 228, the template 214 is sent to a printing press 116 to produce the printed version 118. Thus, at stage 228, both the printed version 118 and the electronic version 120 of the publication 122 is produced from the template 214, for release to the public. The electronic version 120 of the publication 122 comprises static content from the hosted template, wherein the static content of the electronic version 120 of the publication 122 is the same as that of the printed version 118 of the publication 122. Referring to stage 226a of Figure 2A and stage 240 of Figure 2B, the received document 232 may be considered to match content in an article in the template 114 and 214 in response to the exceeding of a comparison score. Such a comparison score is applied when, for example, image recognition is used to perform the matching as described above. The use of image recognition is advantageous in that an identification number does not need to be specified to locate the article containing the matching content to perform the integration of the interactive content from the received document 232 into the template 114 and 214. In one implementation, the one or more computer systems 112 may follow a process 300 as shown in Figure 3. The process 300 is executed by the one or more computer systems 112 and is described below.

[050] In step 302, advertisements are retrieved from a database of the one or more computer systems 112. These advertisements may be uploaded by advertisers (e.g. the party 102) via one or more of the documents 232 using an input portal that may be web based. This input portal provides a web platform that allows advertisers to upload and add interactive elements to their advertisements. The web platform may provide a graphic user interface (GUI) that allows the advertisers to upload advertisements. The GUI may be configured to receive each uploaded advertisement as two documents, the first being the interactive content for the advertisement and the second being the advertisement in its static form. The second document (i.e. the static form of the advertisement) may then be used to determine which article in the template 114 and 214 contains matching content when matching is done in stage 226a of Figure 2A, while the paired interactive content 254 is extracted from the first document (i.e. the interactive content). The

GUI is provided with tools that allow the advertisers to control the manner in which the interactive content behaves relative to the advertisement. The GUI may also be configured to receive each uploaded advertisement as a single document, namely the advertisement in dynamic form, i.e. with the interactive content already present.

5 Such single document upload may be supported by, for example, the GUI operating an algorithm that is able to sample all content within the single document and then compare each sample against all articles in the template 114 of Figure 2A or the template 214 of Figure 2B to determine which article has content that matches the sample. For instance, if the single document is a GIF (graphics interchange format)
10 file, the algorithm is able to compare each image in the GIF file against all of the articles in the template 114 and 214 to determine which article has content that matches the image. The GUI may also be provided with other tools that allow advertisers to program a static advertisement with interactive content selected from a list of available options and also allow the display of content hosted in a website
15 when the advertisement is selected.

[051] In step 304, the one or more computer systems 112 retrieves from a database (which may be the same database as the one used to store the advertisements or a separate database) pages in digital format (such as PDF) of the template 114 and 214. In step 306, the one or more computer systems 112 process
20 each advertisement to perform image recognition against each page of the template 114 and 214. This image recognition is undertaken in step 308 by an image recognition program. The image recognition program uses algorithms to identify an advertisement on a page of the template 114 and 214 and calculate a probability score to filter similar advertisements. In step 310, the program determines that a
25 match is found if the probability score is higher than a threshold.

[052] If a match is found, the image recognition software would return the coordinates, such as the width and height of the article containing the matching content in the template 114 and 214. In step 312, the one or more computer systems 112 would then store this information, along with the article, into the
30 database. Finally, step 314 sees the steps 302, 304, 306, 308, 310 and 312 being repeated for every page in the template 114 and 214.

[053] Figure 4 shows a process 400 which the one or more computer systems 112 of Figure 2A executes to have, in the implementation shown in Figure

2A, the electronic version 120 of the publication 122 enabled with the interactive content in the received document 232. This process 400 continues from the end of the process 300 of Figure 3.

[054] Step 402 occurs after image recognition is performed for every page
5 in the template 114, as described above with reference to Figure 3. The one or more computer systems 112 retrieves the articles containing the matching content from the database.

[055] In step 404, for each retrieved article, the one or more computer
10 systems 112 extract the interactive content of the received advertisements from the database. In step 406, it is determined whether the interactive content needs to be resized to fit the article containing the matching content in the template 114. The coordinates of the interactive content are determined relative to the advertisement, for example against the boundary of the advertisement. If the article containing the matching content in the template 114 is of a different size (eg. being stretched or
15 squashed slightly during pagination) compared to that of the received advertisement, the re-sized coordinates, width and height of the interactive content is then calculated, where the resizing may be based on a geometric translation (stretch or squash). In step 408, code is generated for the calculated coordinates, width and height, which when applied affects the location and dimension of
20 interactive content comprising multimedia files (either loaded from a website or part of the interactive content data). This code may for example be in XML format. HTML code may also be generated for allowing the display of tools that provide control of behaviour of such interactive content, such tools and behaviour being pre-programmed during the creation of the interactive content. An example of such a
25 tool is a play button 802 which can be seen in Figure 8. Picture 804 of Figure 8 shows a portion of a page of the template 114 of Figure 2A, where the paired interactive content 254 is a multimedia video which is superimposed over the static content 806 of an article. Returning to step 408 of Figure 4, code may also be generated that provide further parameters of the interactivity of multimedia files,
30 such as which page of the template 114 the multimedia files appear, or whether the multimedia files can be deactivated after activation. This HTML code and the XML code may be stored in a XML file.

[056] In step 410, code is generated for the calculated coordinates, width and height, which when applied affects the location and dimension of interactive content comprising visual effects. An example of the application of a visual effect can be seen in Figure 8. Picture 808 of Figure 8 shows a portion of a page of the template 114 of Figure 2A, which comprises static content before paired interactive content 254 in the form of a visual effect 810 is activated as shown in picture 812. The visual effect 810 in picture 812 is an enlarged view of the headlight of a vehicle, the enlarged view being superimposed over the static content of the article. Returning to step 410 of Figure 4, code may also be generated that provide further parameters of the interactivity of visual effects, such as which page of the template 114 the visual effects appear, or whether the visual effects can be deactivated after activation. This code may for example be in HTML and JavaScript format. The code generated in step 410 is also included into the XML file created in step 408. In step 412, all images that form the interactive content are placed into a folder.

[057] In step 414, the data in the folder from step 412 and the XML file from the step 408 are packaged into a compressed zip file. In step 416, the compressed zip file is transferred to a server, where it will be downloaded into a mobile device running an application used to open the electronic version 120 of the publication 122.

[058] Accordingly, in the first implementation, the process 200 superimposes or overlays interactive content over the matching content in the article in the template 114. The interactive content for superimposition or overlay is stored separately from the template 114. When the mobile device runs the application to open the electronic version 120, the interactive content will then be superimposed or overlain over the advertisements onto which that the interactive content is mapped, i.e. the article containing the matching content in the electronic version 120. There is thus no replacement of articles in the template 114. For example, when the application is used to browse to a page in the electronic version 120 where there are interactive elements, the application will position the interactive element according to the specified coordinates and allows a user to interact with these elements in accordance with their programmed behaviour.

[059] While the first implementation is described to use image recognition when performing the superimposition or overlay, it is also possible that other

techniques are used to locate an article containing the matching content, such as the above mentioned identification of a marker. Such a marker may for example be an invisible digital watermark that is embedded into both of the article containing the matching content and the received document 232, whereby the one or more computer systems 112 are configured to search for this digital watermark. The second implementation, as described with respect to Figure 2b, of enabling the electronic version 120 to have interactive content substitutes the matching content in the article in the template 214 with the received document 232. In contrast to the first implementation, the second implementation replaces the content of the article that matches with the interactive content of the received document 232. In the scenario where the article containing the matching content contains no further material than the content that is to be replaced, then the matching content may be replaced in its entirety with the interactive content from the received document 232. On the other hand, if the content to be replaced comprises a portion of the material in the article, then only the matching content is replaced. A third implementation of enabling the electronic version 120 to have interactive content does so by loading a media file (such as an audio or video file) that is hosted in an external website, so that the contents of the hosted media file is shown. In this third implementation, the document 232 provides the interactive content by way of providing the necessary link to the external website with the interactive content.

[060] With reference to Figures 2A and 2B, before enabling the template 114 and 214 with the interactive content of the received document 232, each article in the template 214 may have an assigned placement. Each article in the template 114 and 214 may also have static content before being modified to be enabled with the interactive content. It is also possible for the article, before modification, to already have interactive content, whereby the processes 200 and 250 would then replace the existing interactive content with the new interactive content of the received document 232. In this manner, the processes 200 and 250 provide a mechanism to allow advertisers to easily update their content should there be a change in the original concept.

[061] Figure 5 shows a flow chart that the process 200 shown in Figure 2A and the process 250 shown in Figure 2B follow which enables the electronic version 120 of the publication 122 to have interactive content.

[062] In step 502, the template 114 and 214 that facilitates production of the electronic version 120 of the publication 122 and the printed version 118 of the publication 122 is complied.

[063] In step 504, the document 232 with the interactive content is received.

5 [064] In step 506, the received document 232 is compared against each article in the template 114 and 214 to identify an article comprising content that matches the received document 232.

10 [065] In step 508, the matching content in the article is paired with the interactive content from the received document 232 to obtain paired interactive content 254, so as to enable display of the paired interactive content 254 when the electronic version 120 of the publication 122 is viewed.

[066] In step 510, the template 114 and 214 and the paired interactive content 254 are configured for assembly into the electronic version 120 of the publication 122, wherein the electronic version 120 of the publication 122 comprises static content from the template 114 and 214 and wherein the static content of the electronic version 120 of the publication 122 is the same as that of the printed version 118 of the publication 122.

[067] It will also be appreciated that the enablement of the electronic version 120 with interactive content may be done independent to the printed version 118. Figure 6 shows a flow chart which enables the electronic version 120 of the publication 122 to have interactive content.

[068] In step 602, the document 232 with the interactive content is received.

25 [069] In step 604, the received document 232 is compared against each article in the template 114 and 214 that facilitates production of the electronic version 120 of the publication 122 to identify an article in the template 114 and 214 comprising content that matches the received document 232.

30 [070] In step 606, the matching content in the article is paired with the interactive content from the received document to obtain paired interactive content 254, so as to enable display of the paired interactive content 254 when the electronic version 120 of the publication 122 is viewed.

[071] In one implementation, the pairing of the matching content in the article may involve superimposing the interactive content over the article containing the matching content in the template 114 and 214. In another implementation, the

pairing of the matching content in the article may involve substituting or replacing the matching content in the article in the template 114 and 214 with the interactive content from the received document 232.

[072] The identification of the matching content in the article in the template
5 114 and 214 to the received document 232 may be performed by locating at least one marker in either each article in the template 114 and 214 or the received document 232. The received document 232 with the interactive content may be received through an input portal of the one or more computer systems 112.

[073] Figure 7 depicts an exemplary computing device 700, hereinafter
10 interchangeably referred to as a computer system 700, where one or more such computing devices 700 may be used to realise the one or more computer systems 112 of Figures 2A and 2B. The following description of the computing device 700 is provided by way of example only and is not intended to be limiting.

[074] As shown in Figure 7, the example computing device 700 includes the
15 processor 704 for executing software routines. Although a single processor is shown for the sake of clarity, the computing device 700 may also include a multi-processor system. The processor 704 is connected to a communication infrastructure 706 for communication with other components of the computing device 700. The communication infrastructure 706 may include, for example, a communications bus, cross-bar, or
20 network.

[075] The computing device 700 further includes a main memory 708, such as a random access memory (RAM), and a secondary memory 710. The secondary memory 710 may include, for example, a storage drive 712, which may be a hard disk drive, a solid state drive or a hybrid drive and/or a removable storage drive 714, which
25 may include a magnetic tape drive, an optical disk drive, a solid state storage drive (such as a USB flash drive, a flash memory device, a solid state drive or a memory card), or the like. The removable storage drive 714 reads from and/or writes to a removable storage medium 744 in a well-known manner. The removable storage medium 744 may include magnetic tape, optical disk, non-volatile memory storage medium, or the like,
30 which is read by and written to by removable storage drive 714. As will be appreciated by persons skilled in the relevant art(s), the removable storage medium 744 includes a computer readable storage medium having stored therein computer executable program code instructions and/or data.

[076] In an alternative implementation, the secondary memory 710 may additionally or alternatively include other similar means for allowing computer programs or other instructions to be loaded into the computing device 700. Such means can include, for example, a removable storage unit 722 and an interface 740. Examples of a
5 removable storage unit 722 and interface 740 include a program cartridge and cartridge interface (such as that found in video game console devices), a removable memory chip (such as an EPROM or PROM) and associated socket, a removable solid state storage drive (such as a USB flash drive, a flash memory device, a solid state drive or a memory card), and other removable storage units 722 and interfaces 740 which allow software
10 and data to be transferred from the removable storage unit 722 to the computer system 700.

[077] The computing device 700 also includes at least one communication interface 724. The communication interface 724 allows software and data to be transferred between computing device 700 and external devices via a communication
15 path 726. In various embodiments of the inventions, the communication interface 724 permits data to be transferred between the computing device 700 and a data communication network, such as a public data or private data communication network. The communication interface 724 may be used to exchange data between different computing devices 700 which such computing devices 700 form part an interconnected
20 computer network. Examples of a communication interface 724 can include a modem, a network interface (such as an Ethernet card), a communication port (such as a serial, parallel, printer, GPIB, IEEE 1394, RJ45, USB), an antenna with associated circuitry and the like. The communication interface 724 may be wired or may be wireless. Software and data transferred via the communication interface 724 are in the form of signals
25 which can be electronic, electromagnetic, optical or other signals capable of being received by communication interface 724. These signals are provided to the communication interface via the communication path 726.

[078] As shown in Figure 7, the computing device 700 further includes a display interface 702 which performs operations for rendering images to an associated display
30 730 and an audio interface 732 for performing operations for playing audio content via associated speaker(s) 734.

[079] As used herein, the term "computer program product" may refer, in part, to removable storage medium 744, removable storage unit 722, a hard disk installed in

storage drive 712, or a carrier wave carrying software over communication path 726 (wireless link or cable) to communication interface 724. Computer readable storage media refers to any non-transitory, non-volatile tangible storage medium that provides recorded instructions and/or data to the computing device 700 for execution and/or processing. Examples of such storage media include magnetic tape, CD-ROM, DVD, Blu-ray™ Disc, a hard disk drive, a ROM or integrated circuit, a solid state storage drive (such as a USB flash drive, a flash memory device, a solid state drive or a memory card), a hybrid drive, a magneto-optical disk, or a computer readable card such as a PCMCIA card and the like, whether or not such devices are internal or external of the computing device 700. Examples of transitory or non-tangible computer readable transmission media that may also participate in the provision of software, application programs, instructions and/or data to the computing device 700 include radio or infra-red transmission channels as well as a network connection to another computer or networked device, and the Internet or Intranets including e-mail transmissions and information recorded on Websites and the like.

[080] The computer programs (also called computer program code) are stored in main memory 708 and/or secondary memory 710. Computer programs can also be received via the communication interface 724. Such computer programs, when executed, enable the computing device 700 to perform one or more features of embodiments discussed herein. In various embodiments, the computer programs, when executed, enable the processor 704 to perform features of the above-described embodiments. Accordingly, such computer programs represent controllers of the computer system 700.

[081] Software may be stored in a computer program product and loaded into the computing device 700 using the removable storage drive 714, the storage drive 712, or the interface 740. Alternatively, the computer program product may be downloaded to the computer system 700 over the communications path 726. The software, when executed by the processor 704, causes the computing device 700 to perform the method as described in Figure 5 or 6.

[082] It is to be understood that the embodiment of Figure 7 is presented merely by way of example. Therefore, in some embodiments one or more features of the computing device 700 may be omitted. Also, in some embodiments, one or more features of the computing device 700 may be combined together. Additionally, in some

embodiments, one or more features of the computing device 700 may be split into one or more component parts.

[083] It will be appreciated that the elements illustrated in Figure 7 function to provide means for performing the method as described with respect to Figure 5 or 6.

5 [084] Accordingly, the computing device 700 may be used to realise one of the one or more computer systems 112 shown in Figures 2A and 2B. Each of the one or more computer systems 112 may be a server for enabling the electronic version 120 of the publication 122 with interactive content. The server comprises: at least one processor 704 and at least one memory 708 including computer program code.

10 [085] The at least one memory 708 and the computer program code are configured to, with the at least one processor 704, cause the server to at least to compile the template 114 and 214 that facilitates production of the electronic version 120 of the publication 122 and the printed version 118 of the publication 122. The server is further configured to receive the document 232 with the interactive content and compare the received document 232 against each article in the template 114
15 and 214 to identify an article comprising content that matches the received document 232. The server is further configured to pair the matching content in the article with the interactive content from the received document 232 to obtain paired interactive content 254, so as to enable display of the paired interactive content 254
20 when the electronic version 120 of the publication 122 is viewed. The server is further configured to configure the template 114 and 214 and the paired interactive content 254 for assembly into the electronic version 120 of the publication 122, wherein the electronic version 120 of the publication 122 comprises static content from the template 114 and 214 and wherein the static content of the electronic
25 version 120 of the publication 122 is the same as that of the printed version 118 of the publication 122.

[086] Each article in the template 114 and 214 may have an assigned placement before the template 114 and 214 is compared against the received document 232 to locate the article containing the matching content. Each article in
30 the template 114 and 214 may also have static content before being modified to be enabled with the interactive content.

[087] In the implementation of Figure 2A, the at least one memory 708 and the computer program code may be configured to, with the at least one processor 704,

cause the server to superimpose the interactive content over the matching content in the article in the template 114 when pairing the matching content in the article. During configuration of the template 114 and the paired interactive content 254 for assembly into the electronic version 120 of the publication 122, the paired
5 interactive content 254 may be hosted separately from the template 114.

[088] In the implementation of Figure 2B, the at least one memory 708 and the computer program code may be configured to, with the at least one processor 704, cause the server to substitute or replace the matching content in the article in the template 214 with the interactive content from the received document 232 when
10 pairing the matching content in the article. During configuration of the template 214 and the paired interactive content 254 for assembly into the electronic version 120 of the publication 122, the template 214 containing the paired interactive content is hosted as a single document.

[089] In both implementations of Figures 2A and 2B, the identification of the
15 matching content in the article in the template 114 and 214 to the received document may be performed by image recognition. Alternatively, the identification of the matching content in the article in the template 114 and 214 to the received document 232 may be performed by locating at least one marker in either each article in the template 114 and 214 or the received document 232. The received
20 document 232 is considered to match content in the article in the template 114 and 214 in response to the exceeding of a comparison score. The received document 232 with the interactive content may be received through an input portal accessible through the communication interface 724.

[090] The communication interface 724 of the server also provides a
25 transmitter to transmit an application to a mobile device for execution of the application in the mobile device to open the electronic version 120 of the publication 122 created by the method of Figure 5 or 6.

[091] The computing device 700 of Figure 7 may execute the method shown in Figure 5 or 6 when the computing device 700 executes instructions which may be stored
30 in any one or more of the removable storage medium 544, the removable storage unit 522 and storage drive 512. These components 522, 544 and 512 provide a non-transitory computer readable medium having stored thereon executable instructions for controlling the server, realised by the computing device 700, to perform steps

comprising: a) compiling the template 114 and 214 that facilitates production of the electronic version 120 of the publication 122 and the printed version 118 of the publication 122; b) receiving the document 232 with the interactive content; c) comparing the received document 232 against each article in the template 114 and 214 to identify an article comprising content that matches the received document 232; d) pairing the matching content in the article with the interactive content from the received document 232 to obtain paired interactive content 254, so as to enable display of the paired interactive content 254 when the electronic version 120 of the publication 122 is viewed; and e) configuring the template 114 and 214 and the paired interactive content 254 for assembly into the electronic version 120 of the publication 122, wherein the electronic version 120 of the publication 122 comprises static content from the template and wherein the static content of the electronic version 120 of the publication 122 is the same as that of the printed version 118 of the publication 122.

[092] From the above, the present invention provides a methodology that allows for interactive elements to be designed over artwork independent of placement of the interactive elements on a page of an electronic version of a publication and the number of the page. After creation, the interactive elements and their associated still image artwork can be uploaded, through a portal, into a computing system (such as the one or more computer systems 112 shown in Figures 2A and 2B) maintained by a media company before their final placement in the electronic version of a publication is determined. When the publication is ready for release (which may be late at night, especially for newspapers), the computing system will analyse the submitted artwork using image recognition to find a corresponding image in the publication that matches. The respective interactive elements will be scaled and placed over the matching corresponding image found in the publication. The electronic version of the publication that is finally released will have the interactive elements embedded or integrated therein. This therefore allows for the e-publication (i.e. the electronic version of the publication) to accommodate for a last minute change in the layout of the publication (i.e. a change that occurs just before a template is sent for printing). To adopt the methodology of the present invention, media companies do not need to replace their legacy systems and established processes used for pagination and printing of newspapers.

[093] While it is preferable for the e-publication to have the interactive elements embedded at the time of release, the present invention also allows for such interactive elements to be added to e-publications that have already been created or publicly released. Interactive elements can be done independent of the final layout of the page of the publication for release. With reference to Figures 2A and 2B, they are merged onto the respective page by the platform provided by one or more computer systems 112 without the need for manual intervention at the last stage before e-publishing, i.e. the manual process of adding interactive elements to each page and issue is removed. The processes 200 and 250 remove the need for sequential workflow which improves productivity since this allows page layout design and interactive elements design to be done independent of each other.

[094] In the embodiment where the interactive elements are overlain over still images, this may be performed using inexpensive standard software like Adobe Photoshop®. This allows for creation of interactive e-publications to be done cheaply and conveniently, and for daily publications. The processes 200 and 250 of Figures 2A and 2B require little modification over the process 100 of Figure 1 and do not interfere with the production of the printed version 118 of a publication 122.

[095] It will be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

CLAIMS

1. A method of enabling an electronic version of a publication with interactive
5 content, the method comprising:

compiling a template that facilitates production of the electronic version of the
publication and a printed version of the publication;

receiving a document with interactive content;

10 comparing the received document against each article in the template to
identify an article comprising content that matches the received document;

pairing the matching content in the article with the interactive content from
the received document to obtain paired interactive content, so as to enable display
of the paired interactive content when the electronic version of the publication is
viewed; and

15 configuring the template and the paired interactive content for assembly into
the electronic version of the publication, wherein the electronic version of the
publication comprises static content from the template and wherein the static
content of the electronic version of the publication is the same as that of the printed
version of the publication.

20

2. The method of claim 1, wherein each article in the template has an assigned
placement.

3. The method of claim 1 or 2, wherein each article in the template comprises
25 static content before being modified to be enabled with the interactive content.

4. The method of any one of the preceding claims, wherein the pairing of the
matching content in the article comprises superimposing the paired interactive
content over the matching content in the article in the template.

30

5. The method of claim 4, wherein configuring of the template and the paired
interactive content for assembly into the electronic version of the publication further
comprises hosting the paired interactive content separately from the template.

6. The method of any one of the claims 1 to 3, wherein the pairing of the matching content in the article comprises substituting the matching content in the article in the template with the interactive content from the received document and
5 wherein configuring the template and the paired interactive content for assembly into the electronic version of the publication comprises hosting the template containing the paired interactive content.

7. The method of any one of the preceding claims, wherein the identification of
10 the matching content in the article in the template to the received document is performed by image recognition.

8. The method of any one of the preceding claims, wherein the identification of the matching content in the article in the template to the received document is
15 performed by locating at least one marker in either each article in the template or the received document.

9. The method of any one of the preceding claims, wherein the received document is considered to match content in the article in the template in response to
20 the exceeding of a comparison score.

10. The method of any one of the preceding claims, wherein the document with the interactive content is received through an input portal.

25 11. The method of any one of the preceding claims, wherein the article in the template or the received document comprises any one or more of text or graphic.

12. A non-transitory computer readable medium having stored thereon executable instructions for controlling a server to perform steps comprising
30 compiling a template that facilitates production of an electronic version of a publication and a printed version of the publication;
receiving a document with interactive content;

comparing the received document against each article in the template to identify an article comprising content that matches the received document;

pairing the matching content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display
5 of the paired interactive content when the electronic version of the publication is viewed; and

configuring the template and the paired interactive content for assembly into the electronic version of the publication, wherein the electronic version of the publication comprises static content from the template and wherein the static
10 content of the electronic version of the publication is the same as that of the printed version of the publication.

13. A server comprising a transmitter configured to transmit an application to a mobile device for execution of the application in the mobile device to open an
15 electronic version of the publication created by the method of claims 1 to 11.

14. A method of enabling an electronic version of a publication with interactive content, the method comprising:

receiving a document with the interactive content;
20 comparing the received document against each article in a template that facilitates production of the electronic version of the publication to identify an article in the template comprising content that matches the received document; and
pairing the matching content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display
25 of the paired interactive content when the electronic version of the publication is viewed.

15. The method of claim 14, wherein the pairing of the matching content in the article comprises superimposing the paired interactive content over the matching
30 content in the article in the template.

16. The method of claim 15, further comprising hosting the paired interactive content separately from the template.

17. The method of claim 14, wherein the pairing of the matching content in the article comprises substituting the matching content in the article in the template with the interactive content from the received document.

5

18. The method of any one of the claims 14 to 17, wherein the identification of the matching content in the article in the template to the received document is performed by locating at least one marker in either each article in the template or the received document.

10

19. The method of any one of the claims 14 to 18, wherein the document with the interactive content is received through an input portal.

20. A server for enabling an electronic version of a publication with interactive content, the server comprising:

15

at least one processor; and

at least one memory including computer program code;

the at least one memory and the computer program code configured to, with the at least one processor, cause the server at least to:

20

compile a template that facilitates production of the electronic version of the publication and a printed version of the publication;

receive a document with the interactive content;

compare the received document against each article in the template to identify an article comprising content that matches the received document;

25

pair the matching content in the article with the interactive content from the received document to obtain paired interactive content, so as to enable display of the paired interactive content when the electronic version of the publication is viewed; and

30

configure the template and the paired interactive content for assembly into the electronic version of the publication, wherein the electronic version of the publication comprises static content from the template and wherein the static content of the electronic version of the publication is the same as that of the printed version of the publication.

21. The server of claim 20, wherein each article in the template has an assigned placement.

5 22. The server of claim 20 or 21, wherein each article in the template comprises static content before being modified to be enabled with the interactive content.

23. The server of any one of the claims 20 to 22, wherein the pairing of the matching content in the article comprises superimposing the paired interactive
10 content over the matching content in the article in the template.

24. The server of claim 23, wherein the configuration of the template and the paired interactive content for assembly into the electronic version of the publication comprises the at least one memory and the computer program code being further
15 configured to, with the at least one processor, cause the server to host the paired interactive content separately from the template.

25. The server of any one of the claims 20 to 22, wherein the pairing of the matching content in the article comprises substituting the matching content in the
20 article in the template with the interactive content from the received document and wherein the configuration of the template and the paired interactive content for assembly into the electronic version of the publication comprises the at least one memory and the computer program code being further configured to, with the at least one processor, cause the server to host the template containing the paired
25 interactive content.

26. The server of any one of the claims 20 to 25, wherein the identification of the matching content in the article in the template to the received document is performed by image recognition.

30

27. The server of any one of the claims 20 to 26, wherein the identification of the matching content in the article in the template to the received document is

performed by locating at least one marker in either each article in the template or the received document.

28. The server of any one of the claims 20 to 27, wherein the received document
5 is considered to match content in the article in the template in response to the exceeding of a comparison score.

29. The server of any one of the claims 20 to 28, wherein the document with the interactive content is received through an input portal.