

**AN APPARATUS AND METHOD TO ENABLE THE ENTERTAINMENT
SYSTEMS OF TRANSPORT CARRIERS ESPECIALLY INFLIGHT
ENTERTAINMENT SYSTEMS OF AIRCRAFT FOR PASSENGERS TO READ,
SEARCH AND LISTEN TO PRINT PUBLICATIONS**

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*This application is a continuation in part of, and claims
benefit of the filing date of, and hereby incorporates
fully be reference, the granted parent application
10 entitled AN APPARATUS AND METHOD FOR CREATING AN
ELECTRONIC VERSION OF PRINTED MATTER was filed as
Application No. 200301630 filed 19 March 2003 and the date
of grant was 28 April 2006.*

15

FIELD OF THE INVENTION

*The present invention relates generally to an
apparatus and method to enable and empower the
20 entertainment systems of the transport carriers like
aircraft, ship, train, coach, car, etc. so that passengers
can read exact electronic replicas of publications like
magazines, newspapers, comics, periodicals, books, etc.
with embedded video and audio within the publications or
25 with the addition of visual or audio input during the
journey. It is by no means exclusive application to
creating an electronic on-line and off-line version of
onboard publications. This invention has elaborated
towards aircraft in-flight entertainment systems where all
30 the other transport carriers like ship, train, coach, etc.
are of similar systems.*

BACKGROUND OF THE INVENTION

Entertainment systems of the transport carriers like aircraft, ship, train, coach, car, etc. are now getting
5 more popular due to prevalence of IT technology. In-flight entertainment (IFE) systems are now common for many airlines. All the other transport carriers adopt the similar systems of the in-flight entertainment (IFE) systems. Many of which have systems that consisted of a
10 central distribution hub within the aircraft that provide visual and audio contents to multiple of video screens in the cabin. In order for passengers in designated cabin area to watch a movie, the flight attendant has to start the playing of the movie at the central distribution hub.

15

With rapid progression in technology, audio video contents can be delivered to each passenger seat. The delivery processes are categorized in two types; firstly, passengers do not have a choice in determining what audio
20 video contents they view and when they are played. Secondly, audio video feeds are customizable. However, both types require complicated wiring system as data transferring rate has to be of a decent speed from the central delivery hub to individual video screens to ensure
25 smooth viewing of audio video contents and the weight of cabling in an aircraft ranges from 0.5 to 1.5 tons. However, all these being built are not able to deliver electronic copies of printed publication for decent reading at the seats. It takes a long time to load to
30 individual video screen and also takes a long time to turn a page of the publication. Therefore, it is the intention of the invention to resolve the above issues whereby fast and easy reading of exact electronic replicas of

publications are realized. Today, magazines and newspapers are produced in electronic format for printing purpose but the technology and common formats such as PDF, Flash, TIFF, JPEG are too large the file size for the current IFE
5 systems and cannot run on the systems. Moreover, IFE systems have limited storage space and have outdated processors. There is a dire need to provide very small files and fast processing of the files by even on outdated
10 processors. This invention is to provide the solution of this whereby the magazines and newspapers electronic files for printing purpose can be used for the entertainment system of transport carriers especially the in-flight entertainment systems and to create a compelling compression system and algorithms for the in-flight
15 entertainment systems. It also allows very large multi-format files to be able to run on the system. Moreover, this invention allows passengers to order the same electronic publication to be delivered to their email addresses when they landed at the destination. Print
20 copies can also be likewise order through this platform.

Currently, fuel costs are major concerns of airlines and aviation companies are hoping the existing cabling and system which contribute to a significant expenditure of
25 the flight can be used for additional entertainment functions like reading of exact replicas of publications like magazines, newspapers, comics, periodicals, books, etc. with embedded video and audio within the publications or with the addition of visual or audio input.

30

Therefore, it is the intention of this invention to address these problems where the airlines and aviation companies are able to use the existing heavy invested

cables and system to be used for additional function of reading of exact electronic replicas of publications.

The weight of physical magazines and newspaper
5 *contribute another 0.5 to 1.0 tons to the aircraft. This*
is another contributor to fuel cost and has become major
concern of the airlines. Moreover, with the worldwide
concern of the environment and the carbon footprint,
10 *physical publications like magazines and newspapers be*
replaced by electronic magazines and newspapers become
important. It is known that every ton of additional weight
cost airlines tens of millions a year.

The transferring of data to the central delivery hub
15 *in the aircraft is a hassle, as heavy equipments have to*
be used to do the update of the contents due to big file
sizes of the contents. Furthermore, the update has to be
done by technical staff which will make the cost of
operation very high and a tedious process for the airlines.
20 *Some time even the physical hard disk has to be removed*
and replaced with the new contents to save the time of
update. It is another intention of this invention to allow
a simple USB Flash Drive to do the update of the contents
of the publications without the use of heavy equipments.

25 *Moreover, current IFE systems are limited to audio*
video feeds and do not have search of articles or print
publications or text to speech functions. It is another
intention of this invention to allow search within the
publication and also across all the publications using the
30 *current in-flight entertainment systems and allow for text*
to speech function for all publications when passengers
are too tired to read. This invention is able to let the
passengers to read the exact replicas of publications

like magazines, newspapers, comics, periodicals, books, etc. in two modes : (1) exact replicas & zoomable (2) text mode where text font are zoomable. This will allow easy read when the exact replicas is difficult to discern even
5 when it is zoomed. The text mode read will also help passengers with eye-sight issue so that every time the text is read the font size will be the one that the passengers selected before.

10 Beside the creation of such printed matters to electronic version to be able to be viewed on the existing in-flight entertainment systems, it is the intention of this invention to have business process interactivity built-in within the pages, articles and advertisements.
15 When an article is read in the text mode, there is an in-built intelligence engine to analyse the article content and the relevant more info of the content will be displayed at both sides of the article. Passengers are able to click into this more info displays and get more
20 information which in most cases will be more relevant to the destination of the flight which the passengers want. Passengers are able to order for more information to be given to them when landed, obtain a discount coupon when landed, get a special discount to spend at the airport
25 shops, see a video clip to know more about the products and also able to buy the products when they turn to the pages of the publication. This is the intention of this invention to make the journey of travel an interesting experience in both reading and listening with all the
30 business processes even when they land at the destination airport. It is especially significant for the airline industry as airlines will be able to save millions in fuel

cost, save carbon and less pollution due to less print publications carry onboard.

In US 7,836,472 patent, it disclosed a system and
5 method for loading content in in-flight entertainment
systems, whereby digital content servers are
interconnected with network servers such that the content
servers can communicate with one another and with a
portable data loader. It only claimed how the content
10 servers cross-loads content with other content server(s)
when required files are requested from the download server.
However, it cannot solve the big file loading time and
processing speed of the processors both at the cabin seats
and the servers to process electronic files of
15 publications. It is the objective of this invention to
enable electronic files of publications able to be highly
compressed for the inflight entertainment systems and also
able to be processed by the slow processors. Hence it is
totally different from US 7,836,472.

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US 7,343,157 disclosed a cell phone audio/video in-
flight entertainment systems. It only claimed that video
content it provide audio video contents to cell phones
through the means of cells phones, a Pico cell, IFE
25 programming, a soft switch, a transceiver and a media
server. This includes air to ground communication to
acquire video contents. This is different from this
invention to enable and empower the entertainment systems
for passengers to read, search and listen to print
30 publications.

US RE38,142 discloses a low cost hybrid video
distribution system for aircraft in-flight entertainment

systems. The patent solely claims that an aircraft entertainment system employing a hybrid video distribution system that permits distribution of direct broadcast satellite television programming to passengers of the aircraft. However the objective of this invention is to provide print publications like magazines and newspapers in electronic format that include video and audio inputs. This invention does not distribute direct broadcast satellite television programming. Hence, this invention is distinct and dissimilar to US RE38,142.

In US 2007/0130591 A1 discloses a method for controlling an in-flight entertainment(IFE) system using network protocols, such as TCP/IP, HTTP, or FTP. Control of a plurality of functions, including in-seat and broadcast audio and video, overhead reading light control, and flight attendant call, are implemented using a network client, a network server, and network server program, each communicating with network protocols using Browser/Server architecture. The whole purpose is for the method for controlling an in-flight entertainment system whereby the network client may be visible or invisible to a user of the in-flight entertainment system, depending on whether a web browser or a virtual web browser is used as a network client. This is to facilitate easy design of the software for each line replaceable unit (LRU) which may be designed, redesigned, or tested independently from other components within the IFE system. This invention however is very different and not for above purpose. This invention is based on the network protocol of Client/Server architecture of the in-flight entertainment system and the electronic version of the exact replicas of the printed

matter of magazines, newspapers, books & publications are transmitted at very fast speed in this architecture.

*US 6,782,392 B1 relates to a passenger entertainment
5 system that is configured and operated using system to
route and process passenger transactions from requesting
computer processors and dispatch appropriate resources to
fulfill the transactions. To achieve this, passenger
transactions are transmitted to a message processor, which
10 decodes them and generates a request in a predetermined
format. The request is transmitted to a transaction
dispatcher that routes the request to a passenger
entertainment service manager. The passenger entertainment
service manager generates a response to the request
15 message by querying files in a database. Appropriate
resources are dispatched to service the passenger
transactions that are defined in the response to the query.
The invention is different from this and also does not use
message processor to do the decoding.*

20

*US 2008/0141315 A1 relates to an improved user
experience that is provided for passengers on a vessel
such as an airplane, train or ship. Passengers can
25 customize their travel experience ahead of time by
accessing a web-based server system to indicate
preferences with respect to a number of in-flight
entertainment options. The passenger's experience is also
enhanced by allowing passengers to share preferences such
30 as media playlists with others. Meals can be ordered on-
demand once on board, and seat chat as well as group
chatting is also made available through an in-seat or
other proximate entertainment. The invention does not use*

the web-based server to accomplish the improved user experience nor allowing passengers to share preferences such as media playlists with others.

5 *WO 2005/079309 A2 relates to a system and method for integrating a landscape image taken by a camera positioned in a vehicle, such as an aircraft, with images that are generated by an in-flight entertainment system (IFES) so that the IFES is capable of generating landscape images*
10 *for the passengers while the aircraft is in flight. The IFES receives input data pertaining to characteristics of the aircraft and controls the display units that can be viewed by the passengers to generate a display image including information based on the input data and*
15 *landscape video data provided by a camera positioned to obtain images from outside the aircraft, so that the passenger can view the landscape image along with the information pertaining to the location of the aircraft, points of the interest on the landscape image, and so on*
20 *while the aircraft is in flight. The landscape image can be real-time image or a frame image taken at periodic intervals. The information can also include a link to a web site that enables the passenger to click on the link to cause the display unit to display information*
25 *pertaining to a point of interest in a browser-type display window. This invention does not use browser/server architecture which D5 is based upon whereby the information of a landscape image taken by the camera is displayed on a browser-type display window.*

The prior art does not provide a platform whereby exact replicas of print magazines and newspapers can be
5 displayed in electronic format at the in-flight entertainment systems with audio and visual inputs and user-friendly capabilities. In addition, this invention includes data contents are being highly compressed to a very small size especially suited for the use in the
10 present hardware configurations of in-flight entertainment systems utilizing its standard Client/Server architecture network that can do away the physical copies of print newspapers and magazines.

15

SUMMARY OF THE INVENTION

According to a first aspect of the present invention, there is provided an apparatus for creating an electronic
20 version of printed matter to be able to display on entertainment systems especially in-flight entertainment systems, the apparatus including:

data reading means arranged to obtain image data which can be used to present an electronic image of the
25 printed matter to the in-flight entertainment systems, the electronic image having substantially the same appearance

30

as the printed matter, and a region containing information which cannot be readily discerned when viewed on the in-flight entertainment systems;

5 *input means arranged to obtain information data which can be used to present the information contained in the region in a manner that allows the information to be readily discerned when on the in-flight entertainment systems;*

10 *creating means arranged to create a reference which can be used to retrieve the information data at the in-flight entertainment systems; and*

processing means arranged to process the image data and the reference in order to create presentation data,
15 *wherein the presentation data can be used to present the electronic image, and to retrieve the information data so that it can be used to present the information contain in the region in a manner that is readily discernible on the in-flight entertainment systems.*

20

Preferably, the processing means is capable of using the presentation data, wherein the processing means uses the presentation data to present the electronic image on the in-flight entertainment systems and retrieve the
25 *information data, whereupon retrieving the information data the processing means uses the information data to present the information contained in the region on the in-flight entertainment systems.*

30 *Preferably, the processing means in such that it is capable of changing the image data and/or information data in order to effect a change in the electronic image on the in-flight entertainment systems and/or the information*

contained in the region, respectively.

Preferably, the input means is capable of changing the information data in order to effect a change in the
5 *information.*

Preferably, the data reading means is capable of changing the image data in order to effect a change in a resolution of the electronic image on the in-flight
10 *entertainment systems.*

Preferably, the processing means is capable of compressing the presentation data.

15 *Preferably, the processing means compresses the presentation data by identifying a text region and an image region within the electronic image, the processing means being such that it uses a first compression algorithm to compress the text region, and a second*
20 *compression algorithm to compress the image region.*

Preferably, the first compression algorithm includes a text compression algorithm.

25 *Preferably, the second compression algorithm includes a hybrid graphic compression algorithm.*

Preferably, the processing means combines the outputs of the first compression algorithm and the second
30 *compression algorithm to produce a compressed version of the presentation data.*

Preferably, the apparatus includes distribution means

arranged to distribute the presentation data, via the existing communication system of the in-flight entertainment systems to multiple of video screens in the cabin of the passengers.

5

Preferably, the communication means includes cable, optic fibre, wireless, mobile phone, network or satellite network.

10 *Preferably, the presentation data can be used to send data to a processing device.*

Preferably, the data includes RSS feeds, e-mail or e-coupon.

15 *Preferably, the information contained in the region of the electronic image on the in-flight entertainment systems includes text.*

Preferably, the printed matter includes magazines,
20 *newspapers, comics, periodicals, books, etc.*

Preferably, the data reading means, input means, creating means, and processing means include software which can be run on a computer.

25

Preferably, original electronic copies of magazines, newspapers, comics, periodicals, books, etc. are being compressed to a very small size according to the steps mentioned above before transferring onboard to the in-
30 *flight entertainment systems. Contents are viewed in custom-built interface with specialized functions from the video displays.*

Preferably, the electronic copies of the compressed magazines, newspapers, comics, periodicals, books, etc. are transmitted via secured internet transmission from the main server to station manager at all locations worldwide.

5 *(see figure 5)*

Preferably, the software downloader is installed at all Station Manager's PC for auto download of compressed data with auto verification of these files being
10 *downloaded successfully.*

Preferably, the data downloaded is protected with an online security system. Once login online, Station Managers need to select the flight route and then start
15 *the transfer of compressed magazines, newspapers, comics, periodicals, books, etc, wirelessly or through storage devices to a 2 device in specific aircraft.*

Preferably, the information transferred to this
20 *portable device is automatic once activated by a soft switch in the portable device or connected to the content server and the existing hardware of in-flight entertainment systems in aircraft installed do not need any modification.*

25

Preferably, the data on-board is synced with off-board data automatically and can be scheduled.

Preferably, to ensure exact data transfer from on-
30 *board to off-board, the portable device is equipped with file verification and CRC file check. Any missing parts will be automatically retransferred.*

According to a second aspect of the present invention, there is provided a method for creating an electronic version of printed matter to be able to display on entertainment systems especially in-flight

5 entertainment, the method including the steps of:

obtaining image data which can be used to present an electronic image of the printed matter on the in-flight entertainment systems, the electronic image having substantially the same appearance as the printed matter,
10 and a region containing information which can not be readily discerned when viewed on the in-flight entertainment systems;

obtaining information data which can be used to present the information contained in the region in a
15 manner that allows the information to be readily discerned when on the in-flight entertainment systems;

creating a reference which can be used to retrieve the information data; and

processing the image data and the reference in order
20 to create presentation data, wherein the presentation data can be used to present the electronic image on the in-flight entertainment systems, and to retrieve the information data so that it can be used to present the information contain in the region on the in-flight
25 entertainment systems.

Preferably, the processing step further includes using the presentation data to present the electronic image on the in-flight entertainment systems, and to
30 retrieve the information data, whereupon retrieving the information data the processing step uses the information data to present the information contain in the region on the in-flight entertainment systems.

Preferably, the processing step further includes changing the image data and/or information data in order to effect a change in the electronic image and/or the information contained in the region, respectively on the in-flight entertainment systems.

Preferably, the step of obtaining the information data includes changing the information data in order to effect a change in the information on the in-flight entertainment systems.

Preferably, the step of obtaining the image data includes changing the image data in order to effect a change in a resolution of the electronic image on the in-flight entertainment systems.

Preferably, the processing step includes compressing the presentation data.

Preferably, compressing the presentation data includes identifying a text region and an image region within the electronic image, the processing means being such that it uses a first compression algorithm to compress the text region, and a second compression algorithm to compress the image region.

Preferably, the first compression algorithm includes a text compression algorithm.

Preferably, the second compression algorithm includes a hybrid graphic compression algorithm.

Preferably, compressing the presentation data includes combining the outputs of the first compression algorithm and the second compression algorithm to produce a compressed version of the presentation data.

5

Preferably, the method includes the step of distributing the presentation data, via a communication system of the in-flight entertainment systems to individual video panel of the passenger in the cabin.

10

Preferably, the communication means includes cable, optic fibre, wireless, mobile phone network, network or satellite network.

15

Preferably, the presentation data can be used to send data to a device.

Preferably, the data includes RSS feeds, e-mail or e-coupon.

20

Preferably, the information contained in the region of the electronic image on the in-flight entertainment systems includes text.

25

Preferably, the printed matter includes magazines, newspapers, comics, periodicals, books, etc.

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According to a third aspect of the present invention, there is provided software which, when processed by a computing device, allows the computing device to carry out the method of the second aspect of the present invention.

According to a fourth aspect of the present invention,

there is provided a computer readable medium containing the presentation data of the second aspect of the present invention.

5 Various Business Models that can be deployed based on key benefits of the innovation include,

 Advertisements in digitized publications can be enhanced to include the use of audio and video with the
10 technology. Static photographs can be complemented or substituted with videos, either upon loading or upon the user's selection.

 With a built-in functionality to receive and record
15 sales orders from its users, it is possible for passengers to directly make orders in-flight for goods or services advertised on their reading page. This is beneficial for advertisers as well as the airlines, which often have in-flight sales catalogues and required many manpower to
20 complete the orders.

 After the flight arrives, the orders are sent digitally via the station manager's computer to the data servers manually or wirelessly. The data servers will pass
25 this information to the respective suppliers. The orders will then be filled and the goods delivered to the consumers.

 The invention that we have disclosed is to populate
30 the print publications digitally via the aircraft's in-flight entertainment systems since they are transformed and compressed into very small files. The advantage is that it is very precise, requires very little manpower yet

there are advertising possibilities. This is unlike physical hardcopy in-flight circulation, which is exorbitant in cost and proportionally dependent on the circulation and heavy to carry onboard.

5

The in-flight aircraft entertainment system consisted of a distribution hub, a plurality of groups of seat display units with controller devices.

10 The distribution hub includes a program that can read the encrypted data files from a separate memory devices such as USB Flash Drive and any devices capable of storing information. The hub processes and transmits data to individual display unit. This hub can receive inputs on
15 each individual display unit. It is capable of relaying information on air to ground, ground to ground or air to air with or without the aid of a separate device.

Each individual seat display unit consists a double
20 sided controller with keypads for selecting channels, keying words, placing order, controlling the zoom and the volume of the audio, flipping to the next page or return to the previous page and turning on and off the screen. This can be substituted by touch screen device or make the
25 video panel itself to be the touch screen controller.

Each individual seat display unit can work independently without the use of the distribution hub once updated data files are being transferred completely.
30

The main distribution hub can collect and collate details of forms filled up by passengers which are transferred wirelessly or to any memory devices and orders

can be placed immediately to third parties after reaching the designated airport.

Better understanding of these and other functions
5 can be obtained by referring to the following which to aid in the understanding of benefits provided by this system. However, they are not to be construed as limiting in any fashion.

10 When a passenger wants to read magazines or newspapers onboard, there will be hundreds of magazines and newspapers, which are made available through this invention. Passengers just click on to the video panel interface and select their choices. Click on "Magazines"
15 and different categories of magazines will appear. Each category consists of various magazines that are related to the category. Issues of each magazine consist of past and present issues. Inside each magazine, there are a number of ads pages for the front few pages in which passenger
20 can get more information and also order item(s). Also user-friendly features include the ability to zoom in and out, read in text only mode, content page, bookmark and other features. (Refer to FIG. 15 for diagram of controller)

25 When someone reads newspaper, information is static. However this system introduces RSS feeds whereby information is up to date. These feeds come in through Internet connection of the planes and will activate the
30 screen with news by prompting the passenger with a raise up bar at the video screen whether he/she is interested to see the latest news other than the existing exact electronic replicas of newspaper he/she is reading.

A specific scenario is described herewith when a passenger wishes to view Bloomberg BusinessWeek by using the controller. The passenger can navigate to the magazine
5 the passenger wants to read. Firstly when the passenger turns on the display, a screen showing different types of media like Entertainment, Just For Kids, Travel, Learning, PC, Screen Off, Quick Select and E-Library will appear. By using the controller, the passenger can navigate to the E-
10 Library icon and press the "ENTER" button due to the magazines are packed under the "E-Library" title(Magazines can always have an icon by itself like the "E-Library"). When entered, a screen showing different entries like SIA Publications, Magazine, Meal menu, etc.. Secondly, to view
15 magazines, use the Controller and navigate to the entry with the word "Magazines", then press "A" button to enter. A side panel will pop out after selecting "Magazines". It shows the different categories of magazines. The passenger has to note that descriptions of control buttons are
20 always located at the bottom of the screen. Since Bloomberg BusinessWeek is related to business, the passenger has to navigate using the controller and select (press "A" button) the entry with the word "Business" category. While browsing each category, a side panel will
25 pop out beside it with magazines related to that category or entry. The passenger has to use the controller to navigate the side panel to select a magazine out of many magazines in that entry. Once again press the button "A" after navigating to the Businessweek magazine. Thirdly,
30 after selecting Businessweek, a panel of current and past issues will pop out. Using the controller the passenger will navigate to the issue he/she wants, click button "A" to enter. The first few pages of the magazine will be

advertisements which may include audio and visual contents before the front page. The passenger can sign up for special offers or coupon or purchase the advertised item(s) by clicking the "select" button. Next a pop up box will
5 appear with forms to fill in. The passenger has to type in the required data using the mini keyboard on the controller. Fourthly, after the first few pages of the ads, the passenger will be reading the magazine. The passenger can choose to read the articles in text only
10 mode by navigating to articles shown at the right panel. Articles can be zoomed, searched and ordered (per article or issue). While viewing in text only mode the passenger can increase or decrease font size, bookmark and auto scroll. In text only mode there will be more information
15 panels beside it that relate to what the passenger is reading. If the passenger feels that there is a panel that is relevant, the passenger can select it. A pop screen with detailed information will be displayed. If the passenger likes it he/she can purchase it by pressing the
20 "space" button. Then an order form will appear for the passenger to fill in. If the passenger is lost and unable to change page, he/she will just have to press the "Y" to go back and "A" to re-enter.

25

BRIEF DESCRIPTION OF THE DRAWINGS

Notwithstanding any other embodiments that may fall within the scope of the present invention, a preferred
30 embodiment of the present invention will now be described, by way of example only, with reference to the accompanying figure, in which:

Figure 1 illustrates a block diagram of a computer system including the apparatus and method according to the preferred embodiment of the present invention;

5 *Figure 2 illustrates an electronic image presented by the system of figure 1;*

Figure 3 illustrates a distributed architecture which can be used by the preferred embodiment of the present
10 *invention to compress an electronic image; and*

Figure 4 illustrates an image of an editing tool which allows the electronic image to be edited.

15 *Figure 5 is a schematic diagram of the overall constituents that process the contents of the in-flight entertainment systems.*

20 *Figure 6 is the many layout configurations of contents*

Figure 7 is multiple issues of a magazine/newspaper
Figure 8 is Ads page(s) in front of magazine or
25 *newspaper*

Figure 9 is the ability to zoom in pages

Figure 10 is showing the ability to view in text
30 *mode*

Figure 11 is the features in text mode

Figure 12 is the search ability of the system

Figure 13 is to order or register courses, products and other items on the more information panels

5

Figure 14 the ability to make orders of magazines/newspaper

Figure 15 is the key pad of the video controller

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Figure 16 shows a visual cue to communicate that a presentation data is available to be selected and displayed.

15

A PREFERRED EMBODIMENT OF THE INVENTION

Figure 1 illustrates a computer system 1 which includes the apparatus 3 according to the preferred embodiment of the present invention. The apparatus 3 is in the form of a computer. The system also including a storage medium 5 in the form of a computer database, a distribution means 7 in the form of an Internet web server, and an image processor 9 in the form of a scanner or utilising the electronic image output (entire high resolution page) exported directly from the current printing/publishing software. The apparatus 3 and storage medium 5 are interconnected together via a local area network so that they can exchange data. The apparatus 3 is connected to the image processor 9. The storage means 5 and distribution means 7 are also interconnected to each other via the local area network so that they too can exchange data with each other.

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The apparatus 3 includes data reading means for obtaining image data, which can be used to present an electronic image of the printed matter on the in-flight entertainment systems. The electronic image has substantially the same appearance as the printed matter, and includes a region containing information which can not be readily discerned when viewed on the in-flight entertainment systems.

10

The data reading means is in the form of software which allows a user to operate the image processor 9, and hardware in the form of an input/output port. The software provides a graphical user interface for allowing the user to easily operate the image processor 9. The software interacts with the image processor 9 via the input/output port, the latter of which is connected directly to the image processor 9 via a data cable.

20

To commence the process of creating an electronic version of printed matter (such as magazines), a user first places the printed matter into the image processor 9 for scanning. Using the software of the data reading means, the user instructs the image processor 9 to scan the printed matter. Upon scanning the printed matter, the image processor 9 creates the image data (which is in the data format defined by the Joint Photographic Expert Group). The image processor 9 forwards the image data (via the data cable) to the input/output port of the data reading means. The software of the data reading means then proceeds to obtain the image data by reading it from the input/output port.

30

Once the data reading device has obtained the image data, it places the image data in the storage medium 5 for later use.

5 Using appropriate image rendering software (for example, a web browser), the image data can be used to create an electronic image of the printed matter on the in-flight entertainment systems which has substantially the same appearance as the printed matter, and a region
10 which contains information that cannot be readily discerned. The information in the region includes text.

The apparatus 3 also includes an input means for obtaining information data which can be used to present
15 the information contained in the region in a manner that allows the information to be readily discerned when viewed on the in-flight entertainment systems.

The input means is in the form of software which
20 causes the apparatus 3 to present a graphic user interface. The user of the apparatus 3 can enter into the graphical user interface information (text) which corresponds to the information contained in the region. Once the information (text) has been entered into the graphical user interface,
25 the software creates the information data, which reflects the information entered in to the graphical user interface. The information data is in the form of a text data file.

The apparatus 3 stores the information data in a
30 storage medium 5 for later use.

The apparatus 3 has a creating means for creating a reference which can be used to retrieve the information

data. The creating means is in the form of software, while the reference data is in the form of a link (such as a hypertext mark-up link) to the information data.

5 *The apparatus 3 includes processing means, in the form of software, for processing the image data and the reference in order to create presentation data. The processing means is capable of accessing the storage medium 5 in order to retrieve the image data and*
10 *information data for processing. When processed by a computing device, the presentation data allows the computing device to present the electronic image of the printed matter, and to retrieve the information data so that the information contained in the region of the image*
15 *can be presented in a manner that can be readily discerned.*

Upon creating the presentation data, the apparatus 3 forwards the presentation data, which is in the form of hypertext mark-up language, to the storage medium 5 for
20 *use by the distribution means 7. In order to conserve storage space and allow relatively speedy delivery, the processing means compresses the presentation data.*

The apparatus 3 also allows a user thereof to change
25 *(edit) the electronic image of the printed matter and the information data. Consequently, the apparatus 3 is also capable of processing the presentation data. The apparatus allows the user to change/edit aspects such as the resolution of the electronic image and the information*
30 *data. For example, where the electronic image contains a number of advertisements, the processing means allows a user to log-on to the apparatus 3. The log-on process is password protected to ensure only authorised users edit*

the electronic image. once loggeu-on to the apparatus 3,
he/she is presented with the electronic image, and can
simply 'click' on the advertisement therein, for example,
to edit the advertisement. Clicking on the advertisement
5 causes an appropriate editing tool to be presented to the
user. The editing tool contains the advertisement to be
edited. The editing tool is such that the user can change
an image portion and/or text portion of the advertisement.
When the user has completed the edits, the tool can be
10 closed and the processing means makes the appropriate
changes to the image and/or information data. Figure 4,
illustrates an image of the editing tool which is
presented to a user.

Detailed Description of Diagrams

15 The Airline Delivery Process

The provision of traditional print publications on
airlines depended on a physical delivery process. With
this invention replacing the traditional print
publications onboard, it necessitates a different and
20 novel delivery process, which affords greater flexibility
and convenience to the airlines. Most important of all, it
saves the paper, the tree and the fuel.

A proposed mode of delivery is illustrated in FIG. 6.
25

The print publications, provided by the supplier in
an electronic format (e.g. pdf format), are processed by
the Processing & Delivery Servers worldwide. This utilises
the proprietary algorithm to transform and compress the
30 print information into compact-sized Reader (SPR) files.

These SPR files are then disseminated via the internet to the computers of station managers at all locations worldwide, via the designated Downloader website. An automatic download is done back-end from the Process &
5 Delivery Servers, and files are verified.

While all subscribed publications are downloaded, only a select may be destined for a particular flight. The Downloader website provides the interface for this
10 selective electronic dissemination. The Station Manger logs in to the server and identifies the particular flight destination. With this information, the appropriate set of newspapers and magazines are downloaded from the computer to a (USB flash drive) dedicated to the particular flight.

15

The station manager then passes the USB Flash Drive to a member of the aircrew, who upon boarding uploads the data into the plane's central distribution hub. The hub will then deliver content to passengers onboard the flight
20 via individual in-flight entertainment system (IFE).

While print publications are physically and manually delivered, this technology allows digitized publications to be readily available at all airline stations worldwide.
25 This overcomes the limitations on the availability of international newspapers with flight times, which will otherwise require the first flight from the country to supply the printed copies of newspapers.

30 Publications Are Grouped Categorically

Referring to FIG. 6B the publications are grouped categorically. Furthermore, the software will also consist

of search functions, from publication titles to article keywords. This will enable readers to easily find articles of interest.

5 Allowing For An Archive Of Digitized Publications

With digitized publications, it is now possible to conveniently maintain and provide an archive of publications from past time periods in-flight, in addition
10 to the most current issue.

Referring to FIG. 7, one configuration is such that an archive of 5 other most recent issues of the publication is provided, in addition to the most current
15 publication. This is easily maintained by the automated delivery system via the Downloader (FIG. 5), which will update the data held by the stations and the data fed into the airplanes.

Features of Software Layout

20 The software interface of publication reader optimizes the human-technology interaction. The controls and layout are intuitive to use, facilitating an easy interaction between man and technology. Features such as zooming into pictures and adjusting text size improve the
25 reading experience.

Before the start of each magazine, advertisement pages will be shown. Users interested can select the page for more information. In FIG. 8 it shows that more details
30 about the advertisement are shown after selecting it.

In FIG. 9 articles can be zoomed multiple times while retaining high image quality. Often images in pdf. format rapidly lose their clarity when zoom closer. In order to zoom, the user have to press X to zoom in and B to zoom out.

In FIG. 10 while browsing a magazine or a newspaper, any page that is not an advertisement can be viewed in text only mode. In order to select articles in text only should press the start button and to browse the table of contents, one has to conveniently press the Enter button.

In FIG. 11 in the text only mode users have additional functions such as auto scroll and the ability to increase the font size of the text. To enable auto scroll the user have to click 'select' button, to off just press another time. However to increase the font size the user have to press the left and right of the controller, left to increase font size and right to decrease font size. Users can also bookmark their favourite page.

In FIG. 12 the system has the ability to search all articles and titles of any contents.

While the articles are in text mode, more information panels can appear at the side of the text which passengers can purchase or register for the advertised item(s) as shown in FIG. 13a and 13b. Further selecting it passengers can fill up a form for their item(s) as shown it FIG. 13C.

In FIG. 14 it shows the process how a passenger can either select issue(s) or select a single article of a magazine for purchase. Passengers have to fill up a form in order to complete their purchase.

In Fig 13c and 14b they show the order or register form for products and services. This built-in functionality allows sales orders from its users to be

received and recorded and it is possible for passengers to directly make orders in-flight for goods or services advertised on their reading page. This is beneficial for advertisers as well as the airlines, which often have in-flight sales catalogues.

After the flight arrives, the orders are sent digitally via the station manager's computer to the servers. The Servers will pass this information to the respective suppliers. The orders will then be filled and the goods delivered to the consumer. To reassure passengers for their delivery of goods and services, confirmation emails will be sent to their email addresses.

It will be appreciated that whilst the preferred embodiment describes using the Internet to distribute the electronic image of the presented matter, it is possible to distribute the electronic image using communication systems including mobile phones, portable tablets and satellite technology.

As described, clicking on the region in the electronic image results in a further window appearing which contains the information in a readily discernible format. It is also envisaged that the electronic image includes adverts, which when clicked on triggers other events such as information being e-mailed to viewer of the image or sending of an e-coupon.

The process of retrieving the information data involves the browser sending a request for the information data to the distribution means 7. On receiving the request, which identifies the information data, the distribution means 7 accesses the storage medium 5 and obtains the information data. The distribution means 7 then forwards

the presentation data to the user's computer. When the user's computer receives the presentation data, the web browser processes the information data and displays it in a 'window'. As outlined previously, the user can discern
5 the information contained in the region of the electronic image by viewing the window.

The compression algorithm of the preferred embodiment is such that it can be executed on a single server.
10 However, this can require a very powerful server and may take too long if the server is required to carry out numerous compression tasks. It is envisaged that the preferred embodiment can execute the compression algorithm in a distributed manner by utilizing the existing editors'
15 and designers' workstations (which are normally powered by powerful multiple cores processors or are under-utilised as they are using it for web-browsing and word-processing only). Figure 3 illustrates an architecture of the distributed computing system which allows the compression
20 algorithm to be executed in a distributed manner.

The existing editors' and designers' workstations are networked so that compression of the electronic image can be readily carried out in the distributed manner. The
25 distributed technique deploys the use of a compressor server which distributes the image files to be compressed to the networked clients' workstation (editors' workstation) for compressing. Once completed, the compressor server automatically consolidates the
30 compressed files for further processing.

The software running on the workstations is such that it monitors the editor's workstation CPU usage to

efficiently utilise the CPU power to compress those image files. Primarily, it will fully utilise the editor's workstation CPU power when the workstation is in idle mode or low utilization level and vice-versa when the CPU is
5 fully utilise by the editors or designers.

A visual cue 1601 can be seen in the article 1600 displayed on a portable device that can include a touch screen. When it is selected, the presentation data will be
10 displayed. Mentioned previously, the visual cue in the in-flight entertainment is to select a button and then the presentation data is showed.

Those skilled in the art will appreciate that the
15 invention described herein is susceptible to variations and modifications other than those specifically described. It should be understood that the invention includes all such variations and modifications which fall within the spirit and scope of the invention.

20

25

30

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An apparatus for creating an electronic version of printed matter, the apparatus including:

5 data reading means arranged to obtain image data which can be used to present an electronic image of the printed matter on the in-flight entertainment systems, the electronic image having substantially the same appearance as the printed matter, and a region containing information

10 which can not be readily discerned when viewed on the in-flight entertainment systems;

input means arranged to obtain information data which can be used to present the information contained in the region in a manner that allows the information to be

15 readily discerned when viewed on the in-flight entertainment systems;

creating means arranged to create a reference which can be used to retrieve the information data; and

processing means arranged to process the image data

20 and the reference in order to create presentation data, wherein the presentation data can be used to present the electronic image on the in-flight entertainment systems, and to retrieve the information data so that it can be used to present the information contain in the region in a

25 manner that is readily discernible.
2. The apparatus as claimed in claim 1, wherein the processing means is capable of using the presentation data, wherein the processing means uses the presentation

30 data to present the electronic image on the in-flight entertainment systems and retrieve the information data, whereupon retrieving the information data the processing means uses the information data to present the information

~~contained in the region on the in-flight entertainment systems.~~

~~3. The apparatus as claimed in any one of claims 1
5 or 2, wherein the processing means is such that it is
capable of changing the image data and/or information data
in order to effect a change on the electronic image on the
in-flight entertainment systems and/or the information
contained in the region, respectively.~~

10

~~4. The apparatus as claimed in any one of claims
1-3, wherein the input means is capable of changing the
information data in order to effect a change in the
information.~~

15

~~5. The apparatus as claimed in any one of the
preceding claims, wherein the data reading means is
capable of changing the image data in order to effect a
change in a resolution of the electronic image on the in-
20 flight entertainment systems.~~

~~6. The apparatus as claimed in any one of the
preceding claims, wherein the processing means is capable
of compressing the presentation data.~~

~~7. The apparatus as claimed in claim 6, wherein
25 the processing means compresses the presentation data by
identifying a text region and an image region within the
electronic image, the processing means being such that it
uses a first compression algorithm to compress the text
30 region, and a second compression algorithm to compress the
image region.~~

~~8. The apparatus as claimed in claim 7, wherein~~

~~the first compression algorithm includes a text
compression algorithm.~~

~~9. The apparatus as claimed in claim 7 or 8,
5 wherein the second compression algorithm includes a hybrid
graphic compression algorithm.~~

~~10. The apparatus as claimed in any one of claims
7-9, wherein the processing means combines the outputs of
10 the first compression algorithm and the second compression
algorithm to produce a compressed version of the
presentation data.~~

~~11. The apparatus as claimed in any one of the
15 preceding claims, further including distribution means
arranged to distribute the presentation data, via a
communication system, of the in-flight entertainment
systems to individual video panel of the passenger in the
cabin.~~

20

~~12. The apparatus as claimed in claim 11, wherein
the communication means includes cable, optic fibre,
wireless, mobile phone network, network or satellite
network.~~

~~25 13. The apparatus as claimed in any one of the
preceding claims, wherein the presentation data can be
used to send data to a processing device.~~

~~14. The apparatus as claimed in claim 13, wherein
30 the data includes an e-mail or e-coupon.~~

~~15. The apparatus as claimed in any one of the
preceding claims, wherein the information contained in the~~

~~region of the electronic image on the in-flight
entertainment systems includes text.~~

~~16. The apparatus as claimed in any one of the
5 preceding claims, wherein the printed matter includes a
newspaper or magazine.~~

~~17. The apparatus as claimed in any one of the
preceding claims, wherein the data reading means, input
10 means, creating means and processing means include
software which can be run on a computer.~~

181. A method for creating an electronic version of
printed matter on the in-flight entertainment systems, the
15 method including the steps of:

obtaining image data which can be used to present an
electronic image of the printed matter on the in-flight
entertainment systems, the electronic image having
substantially the same appearance as the printed matter,
20 and a region containing information which can not be
readily discerned when viewed on the in-flight
entertainment systems;

obtaining information data which can be used to
present the information contained in the region in a
25 manner that allows the information to be readily discerned
when viewed on the in-flight entertainment systems;

creating a reference which can be used to retrieve
the information data; and

processing the image data and the reference in order
30 to create presentation data, wherein the presentation data
can be used to present the electronic image on the in-
flight entertainment systems, and to retrieve the
information data so that it can be used to present the

information contain in the region.

192. The method as claimed in claim 1, wherein the processing step further includes using the presentation
5 data to present the electronic image on the in-flight entertainment systems, and to retrieve the information data, whereupon retrieving the information data the processing step uses the information data to present the information contain in the region on the in-flight
10 entertainment systems.

203. The method as claimed in claim 1 or 2, wherein the processing step further includes changing the image data and/or information data in order to effect a change
15 in the electronic image on the in-flight entertainment systems and/or the information contained in the region, respectively.

214. The method as claimed in any one of claims 2-3,
20 wherein the step of obtaining the information data includes changing the information data in order to effect a change in the information.

225. The method as claimed in any one of claims 1-4,
25 wherein the step of obtaining the image data includes changing the image data in order to effect a change in a resolution of the electronic image on the in-flight entertainment systems.

30 236. The method as claimed in any one of claims 1-5, wherein the processing step includes compressing the presentation data.

247. The method as claimed in claim 6, wherein
compressing the presentation data includes identifying a
text region and an image region within the electronic
image, the processing means being such that it uses a
5 first compression algorithm to compress the text region,
and a second compression algorithm to compress the image
region.

258. The method as claimed in claim 7, wherein the
10 first compression algorithm includes a text compression
algorithm.

269. The method as claimed in claim 7 or 8, wherein
the second compression algorithm includes a hybrid graphic
15 compression algorithm.

2710. The method as claimed in any one of claims 6-
9, wherein the compressing step includes combining the
outputs of the first compression algorithm and the second
20 compression algorithm to produce a compressed version of
the presentation data.

2811. The method as claimed in any one of claims 1-10,
further including the step of distributing the
25 presentation data, via a communication system, of the in-
flight entertainment systems to individual video panel of
the passenger in the cabin.

2912. The method as claimed in claim 11, wherein the
communication means includes cable, fibre optic, wireless,
30 mobile phone network, network or satellite network.

3013. The method as claimed in any one of claims 1-30,
wherein the presentation data can be used to send data to

a device.

3414. The method as claimed in claim 13, wherein the data includes an e-mail or e-coupon.

5

3215. The method as claimed in any one of claims 1-14, wherein the information contained in the region of the electronic image on the in-flight entertainment systems includes text.

10

3316. The method as claimed in any one of claims 1-15, wherein the printed matter includes a newspaper or magazine.

15

3417. Software for a computing device which, when processed by the computing device, allows the computing device to carry out the method as claimed in any one of claims 1-16.

20

3518. A computer readable medium containing the presentation data created by the method claimed in any one of claims 1-17.

25

~~36. The methodology of a compelling business process interactivity built-in within the in-flight entertainment systems when passengers read the articles in text mode whereby more information relevant will be displayed on the side panel(s) containing the presentation data created by the method claimed in any one of claims 18-33. Passengers can click on them to see the details and able to order the products or register for coupons or appointments or courses (includes plans, newsletters registration and other activities that require registration). With the~~

30

~~more information, the advertisers can track the likings of the passengers and create advertisements that are relevant to the passengers.~~

5 ~~37. The method as claimed in claim 38, wherein when an article is read in the text mode, there is an in-built intelligence engine to analyse the article content and the relevant more info of the content will be displayed at both sides of the article.~~

10

~~38. The method as claimed in claim 39, wherein passengers are able to click into this more info displays and get more information which in most cases will be more relevant to the destination of the flight which the~~
15 ~~passengers want.~~

~~39. The method as claimed in claim 39, wherein passengers are able to order for more information to be given to them when landed, obtain a discount coupon when~~
20 ~~landed, get a special discount to spend at the airport shops, see a video clip to know more about the products and also able to buy the products when they turn to the pages of the publication.~~

25 19. A electronic device, comprising:
 memory;
 one or more processors; and
 one or more modules stored in the memory and configured
 for execution by the one or more processors, the one or
30 more modules including instructions:
 to obtain an image data which can be used to present an
 electronic image of the printed matter on the in-flight
 entertainment systems, the electronic image having

substantially the same appearance as the printed matter,
and a region containing information which cannot be
readily discerned when viewed on the in-flight
entertainment systems;

5 to information data which can be used to present the
information contained in the region in a manner that
allows the information to be readily discerned when viewed
on the in-flight entertainment systems;

10 to create a reference which can be used to retrieve
the information data; and

15 to process the image data and the reference in order
to create presentation data, wherein the presentation data
can be used to present the electronic image on the in-
flight entertainment systems, and to retrieve the
information data so that it can be used to present the
information contain in the region.

20 20. The device of claim 19, further comprising
instructions to display visual cues to communicate that a
presentation data is available to be selected and
displayed.

25 21. The device of claim 20, wherein visual cues comprise
of text and an image.

22. The device of claim 20 wherein said visual cues
comprise of an article symbol indicating a presentation
data is available.

30 23. An electronic device, comprising:
memory;
one or more processors;

means for obtaining image data which can be used to
present an electronic image of the printed matter on the
portable electronic devices and a region containing
information which cannot be readily discerned when viewed
5 on electronic devices with a display; and
means for obtaining information data which can be used to
present the information contained in the region in a
manner that allows the information to be readily discerned
when viewed on the electronic devices with a display; and
10 means for creating a reference which can be used to
retrieve the information data; and
means for processing the image data and the reference in
order to create presentation data, wherein the
presentation data can be used to present the electronic
15 image on the displays of electronic devices, and to
retrieve the information data so that it can be used to
present the information contain in the region.

24. A computer readable storage medium storing one or
20 more programs, the one or more programs comprising
instructions, which when executed by a electronic system,
cause the electronic system to perform a method
comprising:
obtaining image data which can be used to present an
25 electronic image of the printed matter on the portable
electronic devices and a region containing information
which cannot be readily discerned when viewed on
electronic devices with a display; and
obtaining information data which can be used to present
30 the information contained in the region in a manner that
allows the information to be readily discerned when viewed
on the electronic devices with a display; and

creating a reference which can be used to retrieve the information data; and
processing the image data and the reference in order to create presentation data, wherein the presentation data
5 can be used to present the electronic image on the displays of electronic devices, and to retrieve the information data so that it can be used to present the information contain in the region.

10 25. The method of claim 1, wherein the presentation data displayed on the screen has the means for passengers to order for more information to be given to them when landed, obtain a discount coupon when landed, get a special discount to spend at the airport shops, see a video clip
15 to know more about the products and also able to buy the products when they turn to the pages of the publication.

26. The method of claim 1, wherein the presentation data comprises of an email, electronic coupon, electronic
20 publication and advertisement.

27. The device of claim 19, wherein the presentation data comprises of an email, electronic coupon, electronic
25 publication and advertisement.

28. The computer readable storage medium of claim 24, wherein the presentation data comprises of an email, electronic coupon, electronic publication and
advertisement.