METHOD AND AN APPARATUS FOR TRANSMITTING AND RECEIVING TRAFFIC INFORMATION BY USING FILE TRANSFER

Filename Format:
SID-A.SID-B.SID-C.SCID.FileNumber.Version

1.2.3.0_0_0.bin: SNI
1.2.3.0_1_0.bin: SNI
2.3.4.7_0_0.bin: CTT
2.3.4.7_1_0.bin: CTT
2.3.4.7_2_0.bin: CTT
2.3.5.8_0_0.bin: CTT
2.3.5.8_1_0.bin: CTT
2.3.6.2_0_0.bin: RTM

Files or File Fragments to be transferred
A. FORMAT NOM DE FICHIER
B. FICHIERS OU FRAGMENTS DE FICHIERS A TRANSFERER

Abstract: The present invention relates to a method and apparatus for providing road traffic information via file transfer and obtaining the provided information. The present invention configures at least one file containing traffic information to an object according to MOT (Multimedia Object Transfer) protocol. Information about traffic information service such as service configuration format version and information about each file are configured to MOT directory in accordance with MOT protocol, thereby being transmitted wirelessly to a traffic information receiving terminal.
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
DESCRIPTION

METHOD AND AN APPARATUS FOR TRANSMITTING AND RECEIVING TRAFFIC INFORMATION BY USING FILE TRANSFER

1. TECHNICAL FIELD

The present invention relates to a method and an apparatus for providing road traffic information and obtaining the provided information.

2. BACKGROUND ART

With the advancement in digital signal processing and communications technology, radio and TV broadcasts are in the process of being digitized. Digital broadcast can provide various information as well as audio and video contents, where news, stock, weather, traffic information, etc. are a few examples to be contained.

In particular, the necessity for traffic information is constantly increasing with the increment of the number of vehicles in downtown areas, the number of vehicles during holidays, and so on. Accordingly, methods for providing traffic information as auxiliary information via satellite or terrestrial broadcast are under development.

Traffic information requires a standard format because traffic information receiving terminals made by different manufacturers should be able to catch and interpret broadcast traffic information in the same way.

3. DISCLOSURE OF INVENTION

By taking into account the necessity as described above, the present invention is directed to provide a means for providing drivers with useful traffic information via file transfer.
A method for providing traffic information via file transfer in accordance with the present invention comprises transmitting a file containing traffic information configured as an object of a first type; and information about traffic information service and the file as an object of a second type.

A method for receiving traffic information in accordance with the present invention comprises extracting a file containing traffic information from at least one received object of a first type and extracting information about traffic information service and information about each file from a received object of a second type; and based on the extracted information about traffic information service, determining decodability of traffic information embedded in each file and based on the extracted information about each file, determining each file from among the extracted files either to be decoded for utilizing traffic information or to be used for updating traffic information.

In one embodiment in accordance with the present invention, a file containing traffic information, wherein traffic congestion information is contained, is transmitted by MOT (Multimedia Object Transfer) protocol.

In one embodiment in accordance with the present invention, an object of the first type is so configured that header core and header extension are included, an object of the second type not containing head core and header extension.

In one embodiment of the present invention, an object of the second type comprises directory extension containing at least one parameter and directory entries as many as the number of associated objects of the first type, the directory entry containing MOT header that is a duplicate of header core and header extension embedded in an object of the first type.

In one embodiment of the present invention, one parameter of the directory extension contains version information about
service configuration format, sync information specifying time for synchronizing traffic information DB, and type information about transmitted files (e.g., information indicating either binary data or markup language data).

In one embodiment of the present invention, header extension of each MOT header contains a parameter for delivering transmitter-side DB version information of a file carried by an associated object and a parameter for delivering a name of a file carried by an associated object.

In one embodiment of the present invention, a filename consists of an ID assigned to a service provider or contents provider, service component identifier, digits corresponding to file number, and delimiters thereof.

4. BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 illustrates a network through which traffic information is provided in accordance with the present invention;

Fig. 2 illustrates a provision format of traffic information transmitted wirelessly;

Fig. 3a illustrates an example of information recorded in TPEG.txt that is necessary for transmitting traffic information in a file;

Fig. 3b illustrates an example of information recorded in Version.txt for delivering information about traffic information files;

Fig. 3c illustrates a series of files containing traffic information transmitted according to information stored in Version.txt of Fig. 3b;

Fig. 3d illustrates information contained in Version.txt and a series of files transmitted in accordance therewith when a contents provider transmits updated traffic information;

Fig. 4 illustrates MOT (Multimedia Object Transfer) protocol format through which each file containing traffic.
information is transmitted;

Fig. 5 illustrates a structure of a parameter contained in header extension for transmitting a filename;

Fig. 6 illustrates a structure of header core in an object;

Fig. 7 illustrates a structure of MOT directory in accordance with the present invention for transmitting information about a file wherein traffic information is recorded;

Fig. 8a illustrates a structure of a parameter contained in directory extension of Fig. 7 according to the present invention, the parameter carrying version information about service configuration format, synchronization information, and type information about transmitted files;

Fig. 8b illustrates a structure of a parameter contained in MOT header of Fig. 7 according to the present invention, the parameter carrying transmitter-side DB version about traffic information stored in a file; and

Fig. 9 illustrates a block diagram of a navigation terminal that receives traffic information transmitted via file transfer in accordance with one embodiment of the present invention.

5. MODES FOR CARRYING OUT THE INVENTION

Hereinafter, according to the present invention, preferred embodiments will be described in detail with reference to appended drawings.

First of all, a method for providing traffic information wirelessly in accordance with the present invention is described. Fig. 1 is a schematic diagram of a network through which traffic information in accordance with the present invention is provided. A traffic information providing server 100 in a broadcast station reconfigures traffic information collected from various sources (e.g., operator input,
information received from another server through a network 101 or probe cars) and transmits wirelessly so that a traffic information receiving terminal (e.g., a navigation apparatus) installed in a car 200 can receive the traffic information.

As shown in Fig. 2, a format of traffic information transmitted wirelessly from the traffic information providing server 100 can be composed of a sequence of message segments (hereinafter, message segment is referred to as TPEG (Transport Protocol Export Group) message). One message segment of the sequence (e.g., a TPEG message containing CTT (Congestion and Travel-Time) information—this message is referred to as TPEG-CTT message) comprises a message management container 21, CTT event container 22, and TPEG location container 23. CTT event contains information about traffic congestion status and the sequence may also include traffic information other than CTT event (e.g., a TPEG message 30 for transmitting road traffic information).

The message management container 21 contains information about date and time, message occurrence time, etc. The CTT event container 22 contains current congestion status information of each link (road segment), including average speed, travel time, delay time, and degree of congestion in a link. The TPEG location container 23 contains location information about the link.

In addition to the traffic congestion information, a variety of traffic information about road traffic can be provided in a format as shown in Fig. 2 and traffic information can also be provided via file transfer.

In one embodiment according to the present invention for providing traffic information via file transfer, TPEG.txt, Version.txt, and a file containing traffic information—either ‘*.bin’ file (when traffic information is provided by binary data) or ‘*.xml’ file (when traffic information is
provided by markup language)—are required to deliver traffic information such as CTT information (information other than CTT information, e.g., RTM information, can also be included).

Fig. 3a illustrates an example of information recorded in TPEG.txt. TPEG.txt includes version information 300 about configuration format for traffic information service (the information is recorded in the form of “yyyy-mm-dd”); type information 301 about traffic information data carried by a file (binary data or xml script); and sync information 302 that defines the minimum time in units of minute to keep consistency between transmitter and receiver-side traffic information DB. Fig. 3b illustrates an exemplified Version.txt. As illustrated, Version.txt records information about a file carrying traffic information, the information including service identifier (SID) 303 for each file transfer (the identifier is designated by SID-A.SID-B.SID-C), service component ID (SCID) 304, and transmitter-side DB number 305. Fig. 3b deals with the case where four traffic information files are being transmitted.

As illustrated in Fig. 3c, the name of a file carrying traffic information (*.bin, *.xml) is designated in the form of SID-A.SID-B.SID-C.SCID_FileNumber_Version, implying ID assigned to a service provider or contents provider, service component ID, file number, digits corresponding to DB number, and delimiters ('_') thereof. Except for FileNumber element, each name of a file is the same as information about the file contained in Version.txt. FileNumber element is intended for recording the sequential number of a file fragment when the original file is so partitioned by the server 100 as to be appropriate for file transfer (e.g., via MOT protocol). MOT protocol treats each file fragment as a single file (a file is encapsulated into an object); when an MOT decoder at receiver side decodes and delivers each object to an upper application,
the application integrates file segments into a single file and interprets traffic information contained in the file.

Fig. 3c illustrates a series of files carrying traffic information, the files being transmitted in accordance with the information stored in Version.txt of Fig. 3b; a broadcast station having an SID of 1.2.3 (SCID is 0 by default) transmits a file carrying service and network information (SNI) by partitioning the file into two file fragments and a contents provider having an SID of 2.3.4 (SCID = 7) transmits traffic congestion information by using three file fragments.

Henceforth, in order to transmit updated traffic information against provided traffic information, DB number in the filename of a file having updated traffic information is incremented. Fig. 3d illustrates information stored in Version.txt, files transmitted in accordance therewith, and corresponding names when a contents provider (SCID = 7) having SID of 2.3.4 transmits updated traffic information. In comparison with the information of Fig. 3b, 2.3.4 7 0 has been changed to 2.3.4 7 1; information regarding to version information has been changed from 2.3.4_7_x_0.bin to 2.3.4_7_x_1.bin when compared with the case of Fig. 3c.

A traffic information file contains traffic information in binary data that is transmitted in the form of a message sequence as shown in Fig. 2; several data that are required for frame structure carrying a message sequence can be removed in file transfer framework. For instance, frame sync word is removed since it is unnecessary for file transfer; likewise, frame size is also removed since file size is transmitted instead. In addition, SID, SCID and frame type are also removed since they are transmitted being included in a file name. CRC data of frame header is necessarily removed since error correction is carried out according to file transfer protocol.
Fig. 4 illustrates a transfer format when each file (or each file fragment) containing traffic information such as aforementioned TPEG.txt, Version.txt, or binary data files (*.bin) is transmitted via file transfer (e.g., MOT protocol). In this case, MOT protocol is one of examples for file transfer; each file containing traffic information can be transmitted by using another method from among various protocols defined for file transfer. Therefore, the present invention is not limited to the invention based on MOT protocol only.

As illustrated in Fig. 4, a file or file fragment 40 is transmitted as an object 400, the object comprising a body 401 where the file or file fragment 40 is contained, header core 402a and header extension 402b located ahead of the body. An object 400 is partitioned and transmitted by units of a segment. Segment header 410a containing information such as segment size is supplemented to each segment 410; each segment 410 and its header 410a are transmitted being carried in a data group. Data belonging to header 402a, 402b and data belonging to body 401 are so partitioned that they are not intermixed in the same segment. A segment originating from header is transmitted being carried in data group designated as type 3, whereas a segment from body is carried in data group of type 4 or 5.

Filename of each file that is carried by body 401 is transmitted being contained in a parameter as shown in Fig. 5. The size of the entire header including header extension is recorded in 13-bits of HeaderSize 600 field within header core 402a having a structure as illustrated in Fig. 6. 6-bits of ContentType 601 field within header core 402a carries a value indicating contents type 602 of succeeding body, namely, a value indicating traffic information such as '111110'. Accordingly, MOT decoder that receives MOT streams
transmitted in the form as shown in Figs. 4 to 6 reconstructs data contained in the body of each object into files having filenames as specified in header extension, namely, TPEG.txt, Version.txt, and binary data files (*.bin) as shown in Fig. 3c. Subsequently, an application utilizing traffic information, that is to say, an application equipped with TPEG decoding function, based on version information in so extracted TPEG.txt, determines decodability of traffic information contained in binary data files; and based on information about each file contained in Version.txt, determines each file from among reconstructed files either to be decoded for utilizing traffic information or to be used for updating pre-interpreted traffic information. On one hand, according to a specific function, the application equipped with TPEG decoding function can include both TPEG-CTT decoding module for decoding traffic congestion information and TPEG-RTM decoding module for decoding road traffic information (RTM event information), or either of the two.

In one preferred embodiment for providing traffic information via file transfer in accordance with the present invention, information described to be transmitted through TPEG.txt and Version.txt in the previous embodiment is transmitted by using MOT directory having a structure of Fig. 7.

MOT directory is transmitted as an object different from an object for file transfer. MOT directory does not contain a header differently from an object 400 for file transfer, but contains a group of directory entries 701, each of which contains MOT header 701a that is a duplicate of header information 402a, 402b of an object carrying each file containing traffic information. Directory entry group comprises directory entries corresponding to respective objects contained in a carrousel that is a unit for carrying a
set of associated files. MOT directory also contains directory extension 702 where parameters commonly applicable to all the objects associated by directory entries are recorded. Each segment partitioned from MOT directory is transmitted, being carried by data group designated as type 6.

Therefore, in the present embodiment, information, which, in the previous embodiment, is transmitted being recorded in TPEG.txt, is transmitted through one or more than one parameter in the directory extension 702; information about each traffic information file carried by Version.txt is transmitted being recorded to each directory entry (by duplicating header information of an object carrying a corresponding file).

Fig. 8a illustrates a structure of a parameter contained in directory extension 702 of Fig. 7, the parameter carrying version information about service configuration format, sync information, and type information about transmitted files. Fig. 8a shows a parameter of the same structure as that of Fig. 5. In data field of a parameter, version (it is expressed in the form of “yyyy-mm-dd”), sync information (a value expressed in units of minute), and a value that indicates whether file type is of binary data or markup language data. As a parameter ID indicating that those values are recorded, a value of “011111” is assigned to the parameter. The data field is extracted by MOT decoder at receiver and interpreted by a traffic information application (e.g., TPEG decoder).

For each directory entry, one parameter of MOT header 701a duplicated from header of an object carrying a file records transmitter-side DB version information of a file associated with the object. Fig. 8b shows a structure of a parameter that transmits DB version. Since version information of traffic information DB contained in a file (a circulating value that ranges between 0 and 255) is carried by a parameter,
each filename is designated in the format of SID-A.SID-B.SID-
C_SCID_Filenumber. That is to say, each filename comprises an
ID assigned to a service provider or contents provider,
service component ID, digits corresponding to file number, and
delimiters ('_') thereof. The filename is also carried with a
structure of Fig. 5 in MOT header of a directory entry 701a of
MOT directory having the structure of Fig. 7.

When MOT decoder that receives MOT stream containing MOT
directory of Fig. 7 parses directory extension 702 and MOT
headers 701a within MOT directory, an application for traffic
information, namely, an application equipped with TPEG
decoding function (application that decodes CTT and RTM
information), based on version information of service
configuration format within directory extension 702,
determines decodability of traffic information contained in a
binary data file; based on information about respective files
embedded in each MOT header 701a, the application determines
each file either to be decoded for utilizing traffic
information or to be used for updating pre-interpreted traffic
information from among files that the MOT decoder has
extracted from the body of each object.

On the other hand, it is also allowable that service ID
(SID) for a provider who provides service or contents of
traffic information, service component identifier (SCID), and
information about a file sequence, being embedded in
separately defined parameters and inserted in header extension
402b of each object, are transmitted (In an embodiment wherein
MOT directory is transmitted, information of header extension
is also transmitted by each directory entry 701); and filename
to be transmitted can be arbitrarily assigned. In such
embodiment, a traffic information application does not have to
parse filename of a received file.

As to transmitting traffic information via file transfer
described so far, data in a file can be transmitted by using one of commonly known data compression methods.

Fig. 9 is a block diagram of a navigation terminal that receives traffic information transmitted from the server 100 via file transfer in accordance with one embodiment of the invention. The navigation terminal comprises a tuner 1 resonating at the required frequency band of received traffic information signals, a demodulator 2 for outputting traffic information signals embedded in the resonated frequency band, a decoder 3 for obtaining traffic information by decoding the demodulated traffic information signals, a GPS module 8 for calculating the current position (i.e., latitude, longitude, and altitude) by receiving signals from a plurality of satellites, storage means 4 for storing various graphic data and an electronic map including information on links and nodes, an input unit 9 for receiving user input, a navigation engine 5 for controlling screen display based on the user input, the current position, and obtained traffic information, a memory 5a for storing data temporarily, an LCD panel 7 for displaying data, and an LCD drive 6 for driving the LCD panel 7 according to data to be presented. The input unit 9 may be a touch screen incorporated into the LCD panel 7.

The decoder 3 includes MOT decoder 3a and TPEG decoder 3b. When MOT streams are transmitted in the form as shown in Figs. 4 to 6, TPEG.txt, Version.txt, and traffic information files in a format of binary data or markup language are extracted from each object by the MOT decoder 3a, which are delivered to succeeding TPEG decoder 3b. The TPEG decoder 3b, based on version and file type information embedded in the extracted TPEG.txt, determines decodability of traffic information in binary data (or markup language data) file and determines each file either to be decoded for utilizing traffic information or to be used for updating pre-interpreted traffic information.
from among the extracted files based on each file information embedded in Version.txt, traffic information in the determined file (a merged file from file fragments when the determined files are file fragments) being interpreted in accordance with the identified file type information. At this stage, depending on the contents, traffic information in a file is decoded and interpreted by a corresponding decoding module in the TPEG decoder 3b. For example, CTT information is decoded by TPEG-CTT decoding module, whereas RTM event information is decoded by TPEG-RTM decoding module. When the TPEG decoder 3b can handle one particular type only (e.g., CTT information), files carrying traffic information of different types other than CTT information are ignored.

Received data and extracted file data are stored temporarily in the memory 5a until traffic information is decoded completely. When data of a received file contains compressed data, the TPEG decoder 3b runs a particular application, thereby reconstructing the original uncompressed data from the compressed data.

When MOT streams are transferred in the form as shown in Figs. 4 to 7, the MOT decoder 3a extracts directory extension information of MOT directory and MOT header of each directory entry to deliver to the TPEG decoder 3b. Each traffic information file of binary or markup language format from each object is also extracted by the MOT decoder 3a and delivered to the TPEG decoder 3b. When additional information necessary for decoding traffic information is contained in MOT directory, the information is also delivered to the TPEG decoder 3b. The TPEG decoder 3b, based on version and file type information carried by a parameter in the extracted directory extension, determines decodability of traffic information in binary data (or markup language data) file and determines each file either to be decoded for utilizing traffic information or to be used
for updating pre-interpreted traffic information from among extracted files based on information about each file embedded in each MOT header, traffic information in the determined file (a merged file from file fragments when the determined files are file fragments) being interpreted in accordance with the identified file type information.

When received traffic information data is binary data, the TPEG decoder 3 interprets each TPEG message in a file and delivers required information and/or control signals in accordance with the content of the message to the navigation engine 5. To be more specific, the TPEG decoder 3 extracts date/time in message management container of each TPEG message and message occurrence time; and identifies a succeeding container (for example, CTT, RTM Event container) by using the information of ‘message element’. If the succeeding container turns out to be CTT event container, information obtained from the container is delivered in order for the navigation engine 5 to display traffic information. On one hand, location information corresponding to currently delivered traffic information is obtained from a succeeding TPEG location container; the location information, depending on type information of TPEG location container, can be either location coordinates (latitude and longitude) of start position and end position or a link, namely, link ID assigned to a road segment.

If the navigation terminal is equipped with the storage means 4, the navigation engine 5 finds the link location about which the received information is created with reference to information on each link and node stored in the storage means 4. If necessary, the navigation engine 5 converts the coordinates of the link into the link ID or vice versa.

The navigation engine 5 reads a part of the electronic map centered on the position coordinates received from the GPS module 8 from the storage means 4 and displays the map on the
LCD panel 7 via the LCD drive 6. A particular graphic symbol is displayed at the location corresponding to current position on the LCD panel 7.

The navigation engine 5 displays traffic information received from the decoder 3 (e.g., average speed information of a link) at a location corresponding to the coordinate or link ID delivered via the location container following the container delivering the average speed information.

Upon the user request, the navigation engine 5 displays travel time in a link and degree of congestion received from the decoder 3 on the LCD panel 7 instead of or with average speed in a link.

The present invention allows the driver to arrive at a destination in shorter time by providing estimated congestion and travel time information for the driver and effectively disperses the amount of traffic in big cities, thereby promoting effective use of road resources. In particular, since traffic information is provided via file transfer, bandwidth of transfer channel is cut down since data overhead imposed on each frame unit is decreased; moreover, the number of transmitted files is reduced if MOT directory is utilized.

The foregoing description of a preferred embodiment of the present invention has been presented for purposes of illustration. Thus, those skilled in the art may utilize the invention and various embodiments with improvements, modifications, substitutions, or additions within the spirit and scope of the invention as defined by the following appended claims.
CLAIMS

1. A method for providing traffic information, comprising:
organizing a file containing traffic information to an
object of a first type and organizing information on traffic
information service and information on the file to as an
object of a second type; and
transmitting the organized objects.

2. The method of claim 1, wherein an object of the first
type includes of a header core, a header extension, and a body
that encapsulates a file; and
an object of the second type includes a directory
extension containing at least one parameter and directory
entries as many as number of associated objects of the first
type, the directory entry including an MOT header that is a
duplicate of a header core and a header extension embedded in
an object of the first type.

3. The method of claim 2, wherein a parameter in the
directory extension contains version information about service
configuration format, sync information specifying time for
synchronizing traffic information DB, and type information
about transmitted files.

4. The method of claim 3, wherein the type information
has a value to distinguish a binary data file from a markup
language data file.

5. The method of claim 2, wherein a header extension of
the MOT header contains a parameter indicative of transmitter-
side DB version information of a file carried by an associated object and another parameter indicative of filename of a file carried by an associated object.

6. The method of claim 5, wherein filename of the file consists of an ID assigned to a service provider or a contents provider, service component identifier, digits corresponding to file number, and delimiters thereof.

7. A method for receiving traffic information, comprising:
   extracting a file containing traffic information from at least one received object of a first type, and extracting information about traffic information service and information about the file from a received object of a second type.

8. The method of claim 7, further comprising of the step: based on the extracted information about traffic information service, determining decodability of traffic information contained in the extracted file, and based on the extracted information about the file, determining a file, among extracted files, either to be decoded for utilizing traffic information or to be used for updating traffic information.

9. The method of claim 7, wherein an object of the first type includes a header core, a header extension, and a body that encapsulates a file; and
   an object of the second type includes a directory extension containing at least one parameter and directory entries as many as number of associated objects of the first type, the directory entry including an MOT header that is a duplicate of a header core and a header extension embedded in an object of the first type.
10. The method of claim 9, wherein a parameter in the directory extension contains version information about service configuration format, sync information specifying time for synchronizing traffic information DB, and type information about transmitted files.

11. The method of claim 10, wherein the type information has a value specifying either a binary data file or a markup language data file.

12. The method of claim 9, wherein header extension of the MOT header contains a parameter indicative of transmitter-side DB version information of a file carried by an associated object and another parameter indicative of filename of a file carried by an associated object.

13. The method of claim 12, wherein the file consists of an ID assigned to a service provider or a contents provider, service component identifier, digits corresponding to file number, and delimiters thereof.

14. The method of claim 8, further comprising the step of obtaining information about traffic congestion status by decoding traffic information in the file determined to use, and displaying the obtained information on a screen in accordance with a given condition.

15. An apparatus receiving traffic information, comprising:

   a first decoder for extracting a file containing traffic information from at least one received object of a first type and extracting information about traffic information service
and information about the file from a received object of a second type; and

a second decoder for determining decodability of traffic information of the file based on the extracted information about traffic information service, and based on the extracted information about the file, determining a file among extracted files, either to be decoded for utilizing traffic information or to be used for updating traffic information, and obtaining traffic information by decoding data in the determined file.

16. The apparatus of claim 15, further comprising:
a location detector for obtaining information about current location; and

a navigation engine for storing the obtained traffic information and displaying a part of the stored traffic information on display means for road segments belonging to a particular region around the current location obtained from the location detector.

17. The apparatus of claim 15, wherein an object of the first type includes a header core, a header extension, and a body that encapsulates a file; and

an object of the second type includes a directory extension containing at least one parameter and directory entries as many as number of associated objects of the first type, the directory entry including an MOT header that is a duplicate of a header core and a header extension embedded in an object of the first type.

18. The apparatus of claim 17, wherein version information about service configuration format, sync information specifying time for synchronization of traffic information DB, and type information about transmitted files
contained in a parameter in the directory extension are extracted by the first decoder and delivered to the second decoder.

19. The apparatus of claim 17, wherein transmitter-side DB version information and filename of a file carried by an associated object are extracted from a first and a second parameter contained in a header extension of each MOT header by the first decoder and are delivered to the second decoder.

20. The apparatus of claim 15, wherein the second decoder is equipped with a function to decode traffic congestion information.
FIG. 3a

TPEG Service Directory
VERSION : 2000-04-01
TYPE : bin
SYNC : 15

FIG. 3b

Version.txt

1.2.3 0 0
2.3.4 7 0
2.3.5 8 0
2.3.6 2 0

FIG. 3c

Filename Format:
SID-A.SID-B.SID-C_SCID_FileNumber_Version

1.2.3_0_0_0.bin : SNI
1.2.3_0_1_0.bin : SNI
2.3.4_7_0_0.bin : CTT
2.3.4_7_1_0.bin : CTT
2.3.4_7_2_0.bin : CTT
2.3.5_8_0_0.bin : CTT
2.3.5_8_1_0.bin : CTT
2.3.6_2_0_0.bin : RTM

Files or File Fragments to be transferred
FIG. 3d

Version.txt

1.2.3 0 0
2.3.4 7 1
2.3.5 8 0
2.3.6 2 0

1.2.3_0_0_0.bin: SNI
1.2.3_0_1_0.bin: SNI
2.3.4_7_0_1.bin: CTT
2.3.4_7_1_1.bin: CTT
2.3.4_7_2_1.bin: CTT
2.3.5_8_0_0.bin: CTT
2.3.5_8_1_0.bin: CTT
2.3.6_2_0_0.bin: RTM

Files including DB updating data

Files to be transferred
FIG. 5

Header Extension

Parameter 0  Parameter 1  Parameter

2 bits  6 bits  1 bits  8 bits  Nx8 bits

<table>
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<th>PL1</th>
<th>ParamId</th>
<th>Ext.</th>
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<th>File</th>
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<td>001100</td>
<td>0</td>
<td>N</td>
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FIG. 6

BodySize  HeaderSize  ContentType  C

b₃₅  b₂₈  b₂₇  b₁₅  b₁₄  b₉  b₈

b₁₅  b₁₄  b₁₃  b₁₂  b₁₁  b₁₀  b₉  b₈  b₇  b₆  b₅  b₄  b₃  b₂  b₁  b₀
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

G08G 1/09 (2006.01j)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 8 G08G 1/09 1/0967 1/0968 1/04 12/56 1/04Q 7/24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Patents and Applications for Inventions since 1975.

Electronic database consulted during the international search (name of database and, where practicable, search terms used)
eKIPASS (KIPO Internal)
"Keywords: traffic, information, file, transfer, decoder, header, extension and TPEG"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
<tr>
<td>A</td>
<td>US5570361 A (REIKO NORIZUKI et al.) 29 OCTOBER 1996 See abstract, claims 1-6 and figure 26</td>
<td>1-20</td>
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<tr>
<td>A</td>
<td>KR1206100049797 A (MUNHWA BROADCASTING CORP.) 02 JULY 2001 See abstract, claims 1-12 and figures 5-11</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

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19 OCTOBER 2006 (19.10.2006)

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Name and mailing address of the ISA/KR
Korean Intellectual Property Office
923 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea
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Authorized officer
LEE, HYEON HONG
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