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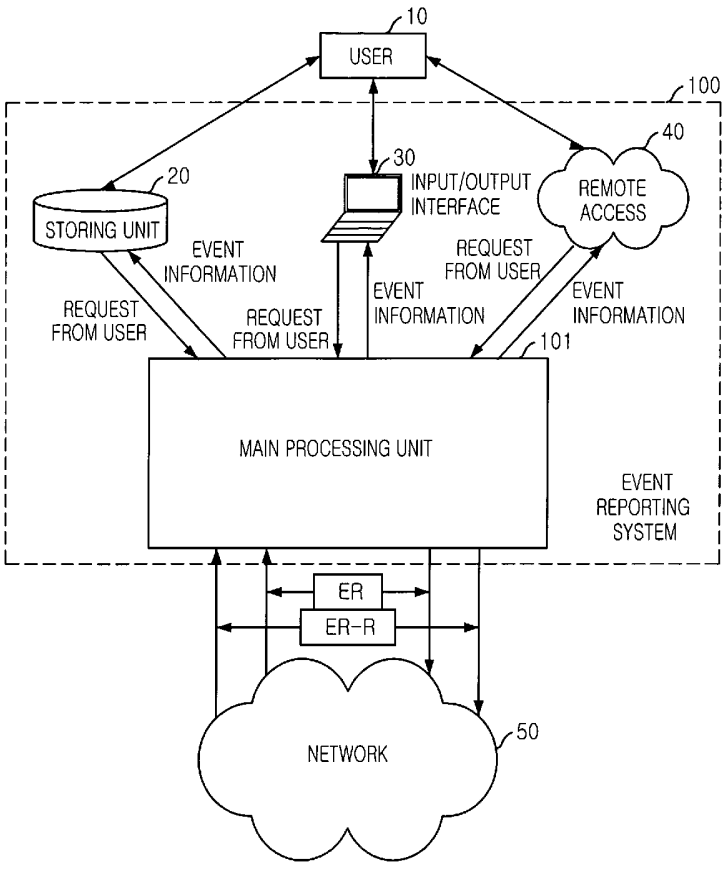
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(54) Title: DATA STRUCTURE, EVENT REPORTING SYSTEM AND METHOD FOR EVENT REPORTING



(57) Abstract: Provided is data structure, system and method for reporting an Event occurred due to a digital item (DI). An Event Report Request data for requesting to deliver an Event Report data, wherein the Event Report data reports an Event occurred in accordance with use of a digital item, the Event Report Request data comprising Delivery Time information describing time for transmitting the Event Report data, wherein the Delivery Time information includes: a specific time; an elapsed time; and a periodic time. An Event Report data for reporting an Event occurred in accordance with use of a digital item, wherein the Event Report data provides information specified in an Event Report Request data, the Event Report data comprising: ER Descriptor describing contents and formats of the Event Report data; and Source Descriptor describing information on a source generating the Event Report data.

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DATA STRUCTURE, EVENT REPORTING SYSTEM AND METHOD FOR EVENT REPORTING

Technical Field

The present invention relates to data structure, system and method for reporting an Event occurred due to a digital item (DI); and more particularly, the present invention relates to data structures of Event Report Request (ER-R) data and Event Report (ER) data, an Event Reporting system for managing and processing the Event based on the ER-R data and the ER data, a method for reporting the Event, and a computer readable medium storing instructions for implementing the same method.

Background Art

Moving picture expert group (MPEG) proposed 'Event Reporting' due to a new standard working item of MPEG-21, a digital item. Referring to definitions of MPEG-21, the digital item means a structured digital object with a standard representation, identification and metadata. The Event Reporting means a process of Event monitoring, which requests a report on a certain Event occurred during the digital item is used in user terminal, and reports occurrence of the Event. The user includes all of a provider, an authorizer, a distributor and a consumer of the digital item.

MPEG-21 includes seven core elements, i.e., Digital Item Declaration (DID), Digital Item Identification and Description (DII&D), Content Handling and Usage, Intellectual Property Management and Protection (IPMP), Terminal & Network, Content Representation and Event Reporting.

An object of the Event Reporting is to provide a

standardized interface for measuring and reporting the Event occurred when using the digital item of MPEG-21 in direct or indirect. The Event Reporting is applied to usage report, e.g., Performance and Copies of the digital item, and technical report, e.g., Bandwidth Usage/Availability, Network Congestion, Load Balancing, and a financial report, e.g., Proof of Purchase, License Purchase and Delivery.

Accordingly, the Event Reporting increases understanding user's action, provides generation, delivery and consumption of the digital item, and enables the user to manage circulation of the copyrighted material by reporting the Event related to royalties and finances.

The Event Reporting is classified into Event Report Requests and Event Reports.

The Event Report Request means a process in which an Event Report Request data, which is preferred to be generated as metadata, requesting a report for a certain Event occurred in accordance to use of a digital item is generated and transmitted.

The Event Report means a process in which that an Event Report data, which is preferred to be generated as metadata, containing report data is generated and transmitted, when an Event specified in the Event Report Request data occurs.

Accordingly, the Event Reporting system should include an apparatus which generates Event Report Request data in response to a request of a user and transmits the same, and an apparatus which receives, analyzes and stores the Event Report Request data, monitors the Event, generates Event Report data corresponding to the Event, and transmits the same.

The Event Reporting system needs to have standardized data structures of the Event Report Request data and the Event Report data.

However, in the conventional system, there is no apparatus for reporting the Event occurred from usage of the digital item, data structures of Event Report Request data and the Event Report data are not standardized. Therefore, there is a problem that the Event Reporting can not be applied.

Disclosure of the Invention

It is, therefore, an object of the present invention to provide data structures of an Event Report Request data and an Event Report data for reporting an Event occurred due to a digital item (DI).

It is, therefore, another object of the present invention to provide an Event Reporting system for processing the Event based on the Event Report Request data and the Event Report data, a method for reporting the Event, and a computer readable medium storing instructions for implementing the same method.

In accordance with an embodiment of the present invention, there is provided an Event Report Request data for requesting to deliver an Event Report data, wherein the Event Report data reports an Event occurred in accordance with use of a digital item, the Event Report Request data comprising Delivery Time information describing time for transmitting the Event Report data, wherein the Delivery Time information includes: a specific time; an elapsed time; and a periodic time.

In accordance with an embodiment of the present invention, there is provided an Event Report data for reporting an Event occurred in accordance with use of a digital item, wherein the Event Report data provides information specified in an Event Report Request data, the Event Report data comprising: ER Descriptor describing contents and formats of the Event Report data; and Source

Descriptor describing information on a source generating the Event Report data.

In accordance with an embodiment of the present invention, there is provided an Event Reporting system for processing an Event Report data in order to report an Event occurred in accordance with use of a digital item, the Event Report system comprising: Event Report Request processing means for generating and delivering an Event Report Request data requesting to report an Event in response to user's request; and Event Report processing means for generating and delivering an Event Report data reporting the Event specified in the Event Report Request data.

In accordance with an embodiment of the present invention, there is provided an apparatus for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the apparatus comprising: Event Report Request generation means for generating the Event Report Request data; Event Report Request transmission means for transmitting the Event Report Request data; Event Report Request receiving means for receiving an Event Report Request data; Event Report Request analysis means for the Event Report Request data received in the Event Report Request receiving means; and Event occurrence monitoring means for monitoring whether or not an Event occurs.

In accordance with an embodiment of the present invention, there is provided an apparatus for processing an Event Report data in order to report an Event occurred in accordance with use of a digital item, the apparatus comprising: Event Report generation means for generating the Event Report data; Event Report transmission means for transmitting the Event Report data; Event Report receiving means for receiving an Event Report data; and Event Report Request analysis means for the Event Report data received

in the Event Report receiving means.

In accordance with an embodiment of the present invention, there is provided a method for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the method comprising steps of: a) generating and delivering the Event Report Request data; and b) receiving an Event Report Request data from an outside, analyzing the Event Report Request data received from the outside and monitoring whether or not an Event specified in the Event Report Request data received from the outside occurs.

In accordance with an embodiment of the present invention, there is provided a method for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the method comprising steps of:a) generating and delivering the Event Report Request data; and b) receiving an Event Report Request data from an outside, analyzing the Event Report Request data received from the outside and monitoring whether or not an Event specified in the Event Report Request data received from the outside occurs.

In accordance with an embodiment of the present invention, there is provided a computer readable recording media storing instructions for executing a method for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the method comprising steps of: a) generating and delivering the Event Report Request data; and b) receiving an Event Report Request data from an outside, analyzing the Event Report Request data received from the outside and monitoring whether or not an Event specified in the Event Report Request data received from the outside occurs.

Brief Description of the Drawings

Fig. 1 is a block diagram showing an Event Reporting system in accordance with the present invention;

Fig. 2 is a diagram showing data structure of Event Report Request data in accordance with an embodiment of the present invention;

Fig. 3 is a diagram showing contents of delivery time information of Event Report Request data in accordance with an embodiment of the present invention;

Fig. 4 is a diagram showing data structure of Event Report Request data in accordance with another embodiment of the present invention;

Fig. 5 is a diagram showing data structure of Event Report data in accordance with another embodiment of the present invention;

Fig. 6 is a diagram showing Event Report Request data including other Event Report Request data and Event Report data including other Event Report data and another Event Report Request data in accordance with an embodiment of the present invention;

Fig. 7 is a detailed block diagram showing a main processing unit of an Event Reporting system in accordance with the present invention;

Fig. 8 is a detailed block diagram showing an Event Report Request processing unit of an Event Reporting system in accordance with the present invention;

Fig. 9 is a detailed block diagram showing an Event Report processing unit of an Event Reporting system in accordance with the present invention;

Fig. 10 is a flow chart showing an Event Report Requesting process;

Fig. 11 is a flow chart showing an Event Reporting process;

Fig. 12 is a flow chart showing an Event Report processing process; and

Fig. 13 is a flow chart showing an Event Report data analyzing process.

Modes for the Invention

The above and other objects and features of the present invention will become apparent from the following description and thereby one of ordinary skill in the art can embody the principles of the present invention and invent various apparatuses within the concept and scope of the present invention. For easy and clear description, the same reference numeral is assigned to the identical elements, though the elements are illustrated in a different drawing. Hereafter, preferred embodiments of the present invention will be described in detail with reference to the drawings.

Fig. 1 is a block diagram showing an Event Reporting system in accordance with the present invention.

As shown, a main processing unit 101, which processes Event Reporting in an Event Reporting system 100, communicates with a user 10 in direct through an input/output interface 30, through a file stored on a storing unit 20 or through a remote access 40. The Event Reporting system transmits and receives to/from other user in outside, Event Report data (ER) or Event Report Request data (ER-R) through a network 50.

Herein, the Event Report Request (ER-R) is information describing what to report, to whom to report, a form of report, when and how to report, when an Event is generated with respect to a digital item. Further description on it will be provided later.

The Event Report (ER) data describes information on the Event requested by the ER-R data, a user requesting the

Event Reporting, and a recipient receiving the ER data, which will be described in detail.

The Event Reporting system 100 can be installed on all of systems generating, transmitting and consuming a digital item, for example, a computer including a laptop computer, a notebook computer, a desktop computer, a workstation and a mainframe, and a mobile terminal including a personal digital assistant (PDA) and a mobile station.

The user 10 accesses the Event Reporting system 100 and requests to generate the Event Report Request (ER-R) data through a direct input process based on an application program.

Also, the user 10 requests the Event Reporting system 100 to generate the ER-R data by storing contents on the storing unit 20 in advance.

The storing unit 20 can be located in inside or outside of the Event Reporting system 100, and includes all kinds of computer readable recording medium, e.g., a CD-ROM, a random access memory (RAM), a read only memory (ROM), a floppy disk, a hard disk and a magneto-optical disk.

Also, the user 10 accesses the Event Reporting system 100 in remote and requests the Event Reporting system 100 to generate the ER-R data.

The Event Reporting system 100 receives a request to generate the ER-R data from the user 10, generates the ER-R data and transmits the ER-R data to the user through a network 50.

The network 50 includes wired/wireless local area networks (LAN), e.g., Ethernet, a fiber distributed data interface (FDDI) network, a token ring network and an asynchronous transfer mode (ATM) network, and a wide area network, e.g., a public switched telephone network (PSTN), a packet switched data network (PSDN) and an integrated services digital network (ISDN).

Also, the Event Reporting system 100 receives the ER data and the ER-R data through the network 50, analyzes them, generates another ER data or another ER-R data and transmits them to an outside, extracts information from the ER data and the ER-R data, stores the extracted information or transmits the extracted information to user application program in direct.

Fig. 2 is a diagram showing data structure of an Event Report Request data in accordance with an embodiment of the present invention.

As shown, the Event Report Request (ER-R) data includes a "Condition Descriptor" field, an "Event Report Request (ERR) Descriptor" field, an "Event Report (ER) Descriptor" field, a "Delivery Descriptor" field and "To Whom" field.

In detail, the ER-R data includes a "Condition Descriptor" describing conditions for the delivery of the ER data, i.e., occurrence of an Event, an "ERR Descriptor" describing identification and characteristics of the ER-R data itself, an "ER Descriptor" describing contents and formats of the ER data corresponding to the Event condition, a "Delivery Descriptor" describing generation and transmission schemes of the ER data, and "To Whom" field describing recipients of the ER data.

The "Condition Descriptor" includes "Time" field describing the Event occurrence time, "DI Related Operation" field describing user operation condition in accordance with the use of the digital item, "Peer Related Operation" field describing condition in accordance with the operations occurred in the peer.

The peer means a device or application that compliantly processes the digital item without modification.

The "Time" describes a specific time, an elapsed time or a periodic time, on which the Event occurs.

The "DI Related Operation" may use terms of right

data dictionary (RDD) defined in MPEG-21, e.g., DI play, stop, modify, install, uninstall, print, adapt, delete, execute and move.

The "Peer Related Operation" may use terms of the Peer Environment of a Digital Item Adaptation (DIA) defined in the MPEG-21, e.g., network congestion and peer capability.

The "ERR Descriptor" includes an "ID" field describing identification (ID) of the ER-R data, a "Description" field of the ER-R data describing attributes of the ER-R data, and an "Access Right" field describing an access right of the ER-R data.

The "Description" information includes a "Time Stamp" field describing a time on which the ER-R data is generated, a "Life Time" field describing a life time of the ER-R data, a "History" field describing a history of creation or modification of the ER-R data and a "Priority Level" field describing the priority level to the ER-R data, wherein the priority level is used by peers to handle ER-R data.

The "ID" may have the same format as digital item identification (DII) defined in the MPEG-21, and the "Life Time" may be described as a time to live (TTL).

The "ER Descriptor" includes an "ER Data Descriptor" field describing a report data list and format of the Event Report (ER) data, wherein the report data list is a list of information to be included in the ER data, and an "ERR" field describing another Event Report Request message data requesting an operation, e.g., an acknowledgement or forwarding of the ER-R data.

The "ER Data Descriptor" includes an "ER ID" field describing identification of an ER data and a "Report Data" field describing list of information which the Event Report data reports.

The "ER ID" may have the same format as the DII defined in the MPEG-21.

The "Report Data" includes a "Peer Data" field describing information on the peer and a "User Data" field describing information on the user.

The "Delivery Descriptor" includes a "Format" field describing a format of data used for generating the ER data, an "Encryption" field describing an encryption method for encrypting the ER data, an "Access right" field describing access right to the ER data, an "Authentication" field describing an authentication method for authenticating the ER data, a "Delivery time" field describing time to delivery the ER data, a "Protocol" field describing a network protocol for delivering the ER data and a "Compression" field describing a compression method for compressing the Event Report data.

The "Delivery Time" includes a specific time, an elapsed time and a periodic time on which the Event Report data is delivered.

Fig. 3 is a diagram showing contents of delivery time information of Event Report Request data in accordance with an embodiment of the present invention.

As shown, the "Delivery Time" may request to deliver the Event Report data on a time t1 (see 1001), before a time t2 (see 1005) and between t1 and t2 (see 1007).

The "Delivery Time" may request to deliver the Event Report data after a time e1 based on Event occurrence (see 1009), before a time e2 (see 1011) and between e1 and e2 (time subtracted from e2 by e1) (see 1013).

Also, the "Delivery Time" may request to deliver the Event Report data at every time corresponding to a transmission period p1 (see 1015).

According to schema of eXtensible Markup Language, hereinafter referred to as XML, syntax of Delivery Time information is defined as Table 1.

【Table 1】

```
<xsd:complexType name="DeliveryTime">
    <xsd:choice minOccurs="0">
        <xsd:element name="specificTime"
type="SpecificTime"/>
        <xsd:element name="elapsedTime"
type="ElapsedTime"/>
        <xsd:element name="periodicTime"
type="PeriodicTime"/>
    </xsd:choice>
</xsd:complexType>
<xsd:complexType name="SpecificTime">
    <xsd:choice>
        <xsd:element name="onTime"
type="xsd:dateTime"/>
        <xsd:sequence>
            <xsd:element name="afterOn"
type="xsd:dateTime" minOccurs="0"/>
            <xsd:element name="beforeOn"
type="xsd:dateTime" minOccurs="0"/>
        </xsd:sequence>
</xsd:choice>
</xsd:complexType>
<xsd:complexType name="ElapsedTime">
    <xsd:sequence>
        <xsd:element name="beginElapse"
type="BeginElapse" minOccurs="0"/>
        <xsd:element name="endElapse"
type="EndElapse" minOccurs="0"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="BeginElapse">
    <xsd:choice>
        <xsd:element name="sTime"
type="xsd:time"/>
```

```
                    <xsd:element name="sDuration"
type="xsd:duration"/>
               </xsd:choice>
          </xsd:complexType>
          <xsd:complexType name="EndElapse">
               <xsd:choice>
                    <xsd:element name="eTime"
type="xsd:time"/>
                    <xsd:element name="eDuration"
type="xsd:duration"/>
               </xsd:choice>
          </xsd:complexType>
          <xsd:complexType name="PeriodicTime">
               <xsd:sequence>
                    <xsd:element name="start"
type="xsd:dateTime" minOccurs="0"/>
                    <xsd:element name="period"
type="xsd:duration"/>
                    <xsd:element name="phase"
type="xsd:duration" minOccurs="0"/>
                    <xsd:element name="duration"
type="xsd:duration"/>
                    <xsd:element name="periodCount"
type="xsd:duration"/>
               </xsd:sequence>
          </xsd:complexType>

          <xsd:element name="deliveryTime"
type="DeliveryTime"/>
```

The semantics of the Delivery Time information used in XML Syntax are described in Table 2.

【Table 2】

Name	Definition
"DeliveryTime"	Delivery Time Information
"SpecificTime"	Specific time to transmit ER data
"ElapsedTime"	Elapsed time to transmit ER data
"PeriodicTime"	Periodic Time to transmit ER data
"onTime"	Time at which ER data should be transmitted
"afterOn"	After a time at which ER data should be transmitted
"beforeOn"	Before a time at which ER data should be transmitted
"beginElapse"	Reference time when elapsed time for transmitting the ER data begins. If there is no beginElapse, the reference time is Event occurrence time
"endElapse"	End time of elapsed time by which delivery of the Event Report data is ended
"sTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"sDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"eTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends
"endDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends

Tables 3 to 5 show an example of Delivery Time information defined by XML syntax.

【Table 3】

```
<deliveryTime>
  <specificTime>
    <beforeOn>2004-03-31T00:00:00</deforeOn>
  </specificTime>
</deliveryTime>
```

【Table 4】

```
<deliveryTime>
  <elapsedTime>
    <beginElapse>
      <sTime>00:00:00</sTime>
    </beginElapse>
<endElapse>
      <eDuration>PT1H</eDuration>
    </endElapse>
</elapsedTime>
</deliveryTime>
```

【Table 5】

```
<deliveryTime>
  <periodicTime>
    <start>2004-01-01T00:00:00</start>
    <period>P1M</period>
    <duration>P1H</duration>
  </periodicTime>
</deliveryTime>
```

Here, XML syntax of Delivery Time information is applied to Event occurrence time information of Condition

Descriptor.

The "To Whom" includes a "Peer IDs" field, which is identification information of the peers receiving the Event Report data, and a "User IDs" field, which is identification information of the users receiving the Event Report data.

The "To Whom" may be multiple recipients, and the recipients may be classified as mandatory recipients and optional recipients.

Here, XML syntax of "To Whom" information is defined as a following table 6.

【Table 6】

```
<xsd:complexType name="Recipient">
    <xsd:sequence minOccurs="1" maxOccurs="unbounded">
        <xsd:element name="peer" type="xsd:string"/>
        <xsd:element name="reportPolicy">
            <xsd:simpleType>
                <xsd:restriction base="xsd:NMTOKEN">
                    <xsd:pattern value="required"/>
                    <xsd:pattern value="optional"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:element name="recipient" type="Recipient"/>
```

Here, semantics of principal parameters used in the XML syntax of "To Whom" are defined as following table 7.

【Table 7】

Name	Definition
"Recipient"	Recipient
"peer"	Peer generating Event Report
"reportPolicy"	Event Report policy. If the value is "required", the peer should transmit the ER data, and if the value is "optional", the Event Report Request message is denied and the ER data can not be transmitted.

Table 8 shows an example of "Recipient" defined by XML syntax in the table 7.

【Table 8】

```
<recipient>
  <peer>Peer1</peer>
  <reportPolicy>required</reportPolicy>
  <peer>Peer2</peer>
  <reportPolicy>optional</reportPolicy>
</recipient>
```

Fig. 4 is a diagram showing data structure of Event Report Request data in accordance with another embodiment of the present invention.

As shown, the data structure of Event Report Request data in accordance with a second embodiment includes a "Condition Descriptor" field, an "ERR Descriptor" field, an "ER Descriptor" field and a "Delivery Descriptor" field. "To Whom" field is included as a specific element of the "Delivery Descriptor", which is different from the ER-R data in accordance with the first embodiment.

An "Access Right" and "Format" fields are included in not the "Delivery Descriptor" but "ER Data Descriptor" field of the "ER Descriptor".

Specific elements of the "Condition Descriptor" and "ERR Descriptor" are identical to those of the ER-R data of the first embodiment.

It is apparent that the means of the elements of the ER-R data of the second embodiment are identical to those of the ER-R data of the first embodiment.

Fig. 5 is a diagram showing data structure of Event Report data in accordance with an embodiment of the present invention.

As shown, the Event Report (ER) data includes an "ER Descriptor" field describing contents and formats of the ER data, a "Source Descriptor" field describing information on a source generating the Event Report message, an "ER Report data" field describing reportable information corresponding to items requested by the ER-R data, and an "Additional Action Descriptor" field describing additional actions related to generation, transmission and reception of the ER data corresponding to the ER-R data.

The "ER Descriptor" includes identification (ID) of the ER data and description information of the ER data. The ER descriptor further includes an "ER Status" field describing status of the ER data, which is an optional element.

The description information includes a "Format" field describing a format of Event Report information data, an "Encryption" field describing an encryption algorithm for encrypting the ER data, an "Access Right" field describing an access right of the ER data, an "Authentication" field describing an authentication method for authenticating the ER data, a "Compression" field describing a compression method for compressing the ER data, a "History" field describing a history of creation or modification of the ER data, a "Priority Level" field describing the priority level to the ER data, wherein the priority level is used by the recipient to handle ER data, and a "Time Stamp" field

describing a timing information on which the ER data is generated.

The "Source Descriptor" includes an "ER Peer ID" field describing identification (ID) of the peer who generates the ER data at the first, and an "Original ERR" field describing information on the ER-R data requesting to generate the ER data.

The "ERR" field may describe the ER-R data requesting to generate the ER data as an embedded whole ERR message data or a reference other ERR data.

The "ER Report Data" may allow the reportable information to be linked to the ER data as an embedded data or a reference data.

The "Additional Action Descriptor" includes an "ERR" field describing another Event Report Request data requesting an operation, e.g., an acknowledgement, forwarding or merging of the ER data, and an "ER" field describing another Event Report data to be linked to the ER data.

Accordingly, the "Additional Action Descriptor" allows the ER data to include another ER-R data or another ER data, and process recursive Event Report or Event Report Request.

The "ERR" may describe the ER-R data requesting an acknowledgement or forwarding or merging of the ER data as an embedded data or a reference data.

The "ER Report Data" may allow another Event Report data related to the ER data as an embedded data or a reference data.

Fig. 6 is a diagram showing Event Report Request data including other Event Report Request data and Event Report data including other Event Report data and another Event Report Request data in accordance with an embodiment of the present invention.

As shown, the ER data may include one or more other

Event Report data or Event Report Request data an embedded data or a reference data.

As shown, an Event Report Request (ER-R) data ER-R A may include other ER-R data ER-R B, ER-R C as a reference data or an embedded data based on the "ERR" of the "ER Descriptor".

Also, the ER data ER A corresponding to the ER-R data ER-R A may include another ER-R data ER-R D as well as ER data ER B, ER C corresponding to ER-R data ER-R B, ER-R C based on the "Additional Action Descriptor".

Accordingly, using the Event Reporting system and the Event Report data in accordance with the present invention, recursive Event Reporting and Event Report Request can be implemented.

Fig. 7 is a detailed block diagram showing a main processing unit 101 of an Event Reporting system in accordance with the present invention.

As shown, the main processing unit 101 includes an Event Report Request (ER-R) processing unit 201 and an Event Report (ER) processing unit 203.

The Event Report Request processing unit 201 receives from a user a request to report an Event, generates an Event Report Request (ER-R) data requesting to report the Event to be occurred when a digital item is used, and transmits the ER-R data to the user.

The Event Report Request processing unit 201 analyzes the ER-R data received from an outside, monitors whether or not the Event specified in the ER-R data occurs, and requests the Event Report processing unit 203 to generate an Event Report (ER) data when the Event specified in the ER-R data occurs.

The Event Report processing unit 203 generates an Event Report (ER) data requested by the Event Report Request processing unit 201, transmits the ER data to the user. The Event Report processing unit 203 analyzes an ER

data received from the outside, extracts contents of the ER data and transmits the contents of the ER data to the user.

It is apparent to one skilled in the art that the Event Report Request processing unit 201 and the Event Report processing unit 203 may be independently implemented and operated in different devices (peer).

Fig. 8 is a detailed block diagram showing an Event Report Request processing unit of an Event Reporting system in accordance with the present invention;

As shown, the Event Report Request processing unit 201 includes an Event Report Request generation unit 301, an Event Report Request transmission unit 303, an Event Report Request receiving unit 305, an Event Report Request analysis unit 307, an Event occurrence monitoring unit 309 and an Event Report Request information managing unit 311.

The Event Report Request generation unit 301 generates the ER-R data in accordance with the request of the user.

The Event Report Request transmission unit 303 transmits the ER-R data generated in the Event Report Request generation unit 301 to the recipient.

The Event Report Request transmission unit 303 is made by a protocol stack for a network resource and attaches a protocol header to the ER-R data generated in the Event Report Request generation unit 301 and transmits the ER-R data.

The ER-R data and the ER data may be transmitted through on a commonly used protocol, e.g., a transmission control protocol (TCP), a user datagram protocol (UDP), a hyper-text transfer protocol (HTTP), a simple object access protocol (SOAP), or through a new protocol developed for the Event Reporting.

The Event Report Request receiving unit 305 is a network module which receives the ER-R data from an outside and analyzes a network header of the ER-R data. If the ER

data is transmitted to itself, the Event Report Request receiving unit 305 transmits the ER-R data to the Event Report Request analysis unit 307, and if not, the Event Report Request receiving unit 305 transmits the ER-R data to a network route for the recipient of the ER-R data.

The Event Report Request analysis unit 307 analyzes the ER-R data received from the outside, transmits to the Event occurrence monitoring unit 309 information on whether an Event Report is requested when a certain Event occurs with respect to a certain digital item, and transmits to the Event Report Request information managing unit 311 the information on what information to report, to whom to report, a format of the report, when to report and how to report.

The Event occurrence monitoring unit 309 monitors whether or not it occurs the Event for the digital item specified in the ER-R data.

For example, the ER-R data requesting to report an Event when the digital item is played, the Event occurrence monitoring unit 309 monitors whether or not the digital item specified in the ER-R data is played, and when starting to play the digital item, informs occurrence of the Event to the Event Report Request information managing unit 311 to generate an ER data.

The Event Report Request information managing unit 311 is a database storing the information received from the Event Report Request analysis unit 307. If the occurrence of the Event is informed from the Event occurrence monitoring unit 309, the Event Report Request information managing unit 311 determines time on which the ER data should be generated based on the stored ERR information, and transmits the information to the Event Report processing unit 203 so that the ER data is generated on the specific time or between the times.

Fig. 9 is a detailed block diagram showing an Event

Report processing unit of an Event Reporting system in accordance with the present invention.

As shown, the Event Report processing unit includes an Event Report generation unit 401, an Event Report transmission unit 403, an Event Report receiving unit 405 and an Event Report analysis unit 407.

The Event Report generation unit 401 generates Event Report (ER) data in response to request to generate the ER data from the Event request information managing unit 313.

The Event Report transmission unit 403 transmits the ER data generated in the Event Report generation unit 401 to the user.

The Event Report transmission unit 403 is made by a protocol stack for a network resource and is a network module which attaches a protocol header to the ER data generated in the Event Report generation unit 401 and transmits the ER data through an actual network resource.

The Event Report receiving unit 405 is a network module which receives the ER data from an outside and analyzes a network header of the ER data. If the ER data is transmitted to itself, the Event Report receiving unit 405 transmits the ER data to the Event Report analysis unit 407, and if not, the Event Report receiving unit 405 transmits the ER data to a network route for the recipient of the ER data.

The Event Report analysis unit 407 analyzes the ER data received from the outside, extracts information on what Event occurs for what digital item from the ER data, and transmits the information to the user. If the ER data includes Event Report Request (ER-R) data, the Event Report analysis unit 407 transmits the ER-R data to the Event Report Request processing unit 201.

Fig. 10 is a flow chart showing an Event Report Requesting process.

First, the Event Report Request processing unit 201

generates ER-R data or receives ER-R data from an outside at step S600.

The Event Report Request processing unit 201 analyzes the ER-R data at step S601 and checks the recipient of the ER-R data at step S602.

If the recipient is not itself, at step S603, the ER-R data is transmitted to a network route for the recipient of the ER-R data.

If the recipient is itself, the Event Report Request processing unit 201 analyzes contents of the ER-R data at step S605, and determines whether the ER-R data includes another ER-R data at step S606.

If the ER-R data includes another ER-R data, the process continues to the step S601, to process another ER-R data.

If the ER-R data does not include other ER-R data, the Event Report Request processing unit 201 stores the ER-R data at step S607, and monitors whether it occurs an Event corresponding to the ER-R data at step S609.

Fig. 11 is a flow chart showing an Event Report process.

If a reportable Event occurs, a generation of an Event Report (ER) data is requested and the ER data is generated at step S701.

A "Delivery Time" specified in the ER-R data is checked at step S703 and the ER data is delivered to the user on the delivery time at step S705.

Fig. 12 is a flow chart showing an Event Report processing process.

The ER data is received from the outside at step S801, contents of the ER data is analyzed at step S803, and it is determined whether or not the ER data includes another ER-R data at step S804.

If the ER data includes another ER-R data or a request to report an Event is received from the user, the

ER-R data is generated and transmitted at steps S805 and S807.

Fig. 13 is a flow chart showing an Event Report data analyzing process.

First, a header of the ER data is analyzed at step S901, and the recipient of the ER data is checked at step S902.

If the recipient is not itself, at step S903, the ER data is transmitted to a network route for the recipient of the ER data.

If the recipient is itself, contents of the ER data is analyzed at step S905, extracts information from the ER data and transmits the information to the user at step S909.

The present invention can be implemented and stored in a computer readable recording medium, e.g., CD-ROM, a random access memory (RAM), a read only memory (ROM), a floppy disk, a hard disk, and a magneto-optical disk.

While the present invention has been described with respect to certain preferred embodiments, it will be apparent to those skilled in the art that various changes and modifications may be made without departing from the scope of the invention as defined in the following claims.

What is claimed is:

1. An Event Report Request data for requesting to deliver an Event Report data, wherein the Event Report data reports an Event occurred in accordance with use of a digital item, the Event Report Request data comprising Delivery Time information describing time for transmitting the Event Report data,

wherein the Delivery Time information includes:

a specific time;

an elapsed time; and

a periodic time.

2. The Event Report Request data as recited in claim 1, wherein the specific time includes information requesting to transmit the Event Report data at least one of on a first time, after the first time, before a second time and between the first time and the second time.

3. The Event Report Request data as recited in claim 2, wherein the elapsed time includes information requesting to transmit the Event Report data at least one of after on, before after a third time, before a fourth time and between the third time and the fourth time.

4. The Event Report Request data as recited in claim 1, further comprising Time information describing time on which the Event occurs,

wherein the Time information includes:

a specific time;

an elapsed time; and

a periodic time.

5. The Event Report Request data as recited in claim 4, wherein the specific time includes information on which

the Event occurs at least one of on a first time, after the first time, before a second time and between the first time and the second time.

6. The Event Report Request data as recited in claim 2, wherein the elapsed time includes information on which the Event occurs at least one of after on, before after a third time, before a fourth time and between the third time and the fourth time.

7. The Event Report Request data as recited in claim 1, further comprising To Whom information,

wherein the To Whom information includes:

a mandatory recipient to whom the Event Report data is transmitted in mandatory; and

an optional recipient to whom the Event Report data is transmitted in optional.

8. The Event Report Request data as recited in claim 7, further comprising:

Condition Descriptor describing conditions for the delivery of the Event Report data, i.e., Event condition related to operation for a digital item and Event occurrence time; and

ERR Descriptor describing identification and characteristics of the Event Report Request data.

9. The Event Report Request data as recited in claim 8, wherein the Condition Descriptor includes:

Time information describing the Event occurrence time;

DI Related Operation describing user operation condition in accordance with the use of the digital item; and

Peer Related Operation describing condition in

accordance with the operations occurred in the peer.

10. The Event Report Request data as recited in claim 9, wherein the ERR Descriptor includes:

ID describing identification (ID) of the EVENT REPORT REQUEST data;

Description of the EVENT REPORT REQUEST data describing attributes of the EVENT REPORT REQUEST data; and

Access Right describing an access right of the Event Report Request data.

11. The Event Report Request data as recited in claim 10, wherein the Description includes:

Time Stamp describing a time on which the EVENT REPORT REQUEST data is generated;

Life Time describing a life time of the EVENT REPORT REQUEST data;

History describing a history of changes or modification of the EVENT REPORT REQUEST data; and

Priority Level describing the priority level of the EVENT REPORT REQUEST data, wherein the priority level is used by peers to handle Event Report Request data.

12. The Event Report Request data as recited in claim 11, further comprising:

ER Descriptor describing contents and formats of the Event Report data corresponding to the Event condition;

Delivery Descriptor describing generation and transmission schemes of the Event Report data; and

To Whom describing a recipient of the Event Report data.

13. The Event Report Request data as recited in claim 12, wherein the ER Descriptor includes:

ER Data Descriptor describing a report data list and

format of the Event Report data, wherein the report data list is a list of information to be included in the Event Report data; and

ERR describing another Event Report Request data requesting an operation, e.g., an acknowledgement or forwarding of the Event Report Request data.

14. The Event Report Request data as recited in claim 13, wherein the ER Data Descriptor includes:

ER ID describing identification of the Event Report data; and

Report Data describing a list of information which the Event Report data reports.

15. The Event Report Request data as recited in claim 14, wherein the To Whom includes:

Peer IDs, which is identification information of the peers receiving the Event Report data; and

User IDs, which is identification information of the users receiving the Event Report data.

16. The Event Report Request data as recited in claim 15, wherein the Delivery Descriptor includes:

Format describing a format of data used for generating the Event Report data;

Access Right describing access right to the Event Report data;

Encryption describing an encryption algorithm for encrypting the Event Report data;

Authentication describing an authentication algorithm for authenticating the Event Report data;

Delivery Time describing time to delivery the Event Report data;

Protocol describing a protocol for delivering the Event Report data; and

Compression describing a compression algorithm for compressing the Event Report data.

17. The Event Report Request data as recited in claim 16, wherein Report Data includes:

Peer Data describing information on the peer; and

User Data describing information on the user.

17. The Event Report Request data as recited in claim 7, further comprising:

ER Descriptor describing contents and formats of the Event Report data corresponding to the Event condition; and

Delivery Descriptor describing generation and transmission schemes of the Event Report data

19. The Event Report Request data as recited in claim 16, wherein the ER Descriptor includes:

ER Data Descriptor describing a report data list and format of the Event Report data, wherein the report data list is a list of information to be included in the Event Report data; and

ERR describing another Event Report Request data requesting an operation, e.g., an acknowledgement or forwarding of the Event Report Request data.

20. The Event Report Request data as recited in claim 19, wherein the ER Data Descriptor includes:

ER ID describing identification of an Event Report data;

Access right describing access right to the Event Report data;

Report Data describing list of information which the Event Report data reports; and

Format describing a format of data used for generating the Event Report data.

21. The Event Report Request data as recited in claim 20, wherein the Delivery Descriptor includes:

To Whom describing a recipient of the Event Report data;

Delivery time describing time to delivery the Event Report data; and

How describing a transmission method of the Event Report data.

22. The Event Report Request data as recited in claim 20, wherein the To Whom includes:

Peer IDs, which is identification information of the peers receiving the Event Report data; and

User IDs, which is identification information of the users receiving the Event Report data.

23. The Event Report Request data as recited in claim 22, wherein the How includes:

Compression describing a compression algorithm for compressing the Event Report data;

Encryption describing an encryption algorithm for encrypting the Event Report data;

Authentication describing an authentication algorithm for authenticating the Event Report data; and

Protocol describing a protocol for delivering the Event Report data.

24. The Event Report Request data as recited in claim 23, wherein the ERR includes or refers another Event Report Request data requesting an acknowledgement or forwarding of the Event Report data.

25. The Event Report Request data as recited in claim 24, wherein the DI Related Operation uses terms of right

data dictionary (RDD) defined in MPEG-21.

26. The Event Report Request data as recited in claim 25, wherein the Peer Related Operation uses terms of the Peer Environment of a digital item adaptation (DIA) defined in the MPEG-21.

27. The Event Report Request data as recited in claim 26, wherein the ID of the ERR Descriptor has the same format as a digital item identification (DII) defined in the MPEG-21.

28. The Event Report Request data as recited in claim 1 or 6, wherein based on schema of eXtensible Markup Language (XML), syntax of the Delivery time information is defined as:

(Table 1)

```
<xsd:complexType name="DeliveryTime">
    <xsd:choice minOccurs="0">
        <xsd:element name="specificTime"
type="SpecificTime"/>
        <xsd:element name="elapsedTime"
type="ElapsedTime"/>
        <xsd:element name="periodicTime"
type="PeriodicTime"/>
    </xsd:choice>
</xsd:complexType>
<xsd:complexType name="SpecificTime">
    <xsd:choice>
        <xsd:element name="onTime"
type="xsd:dateTime"/>
        <xsd:sequence>
            <xsd:element name="afterOn"
type="xsd:dateTime" minOccurs="0"/>
```

```
                        <xsd:element name="beforeOn"
type="xsd:dateTime" minOccurs="0"/>
                </xsd:sequence>
        </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="ElapsedTime">
                <xsd:sequence>
                        <xsd:element name="beginElapse"
type="BeginElapse" minOccurs="0"/>
                        <xsd:element name="endElapse"
type="EndElapse" minOccurs="0"/>
                </xsd:sequence>
        </xsd:complexType>
        <xsd:complexType name="BeginElapse">
                <xsd:choice>
                        <xsd:element name="sTime"
type="xsd:time"/>
                        <xsd:element name="sDuration"
type="xsd:duration"/>
                </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="EndElapse">
                <xsd:choice>
                        <xsd:element name="eTime"
type="xsd:time"/>
                        <xsd:element name="eDuration"
type="xsd:duration"/>
                </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="PeriodicTime">
                <xsd:sequence>
                        <xsd:element name="start"
type="xsd:dateTime" minOccurs="0"/>
                        <xsd:element name="period"
type="xsd:duration"/>
```

```
                    <xsd:element name="phase"
    type="xsd:duration" minOccurs="0"/>
                    <xsd:element name="duration"
    type="xsd:duration"/>
                    <xsd:element name="periodCount"
    type="xsd:duration"/>
                </xsd:sequence>
            </xsd:complexType>

            <xsd:element name="deliveryTime"
    type="DeliveryTime"/>
```

(Table 2)

Name	Definition
"DeliveryTime"	Delivery Time Information
"SpecificTime"	Specific time to transmit ER data
"ElapsedTime"	Elapsed time to transmit ER data
"PeriodicTime"	Periodic Time to transmit ER data
"onTime"	Time at which ER data should be transmitted
"afterOn"	After a time at which ER data should be transmitted
"beforeOn"	Before a time at which ER data should be transmitted
"beginElapse"	Reference time when elapsed time for transmitting the ER data begins. If there is no beginElapse, the reference time is Event occurrence time
"endElapse"	End time of elapsed time by which delivery of the Event Report data is ended
"sTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data

	for the Event starts
"sDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"eTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends
"endDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends

29. The Event Report Request data as recited in claim 7, wherein based on schema of eXtensible Markup Language (XML), syntax of the To Whom information is defined as:

(Table 3)

```
<xsd:complexType name="Recipient">
    <xsd:sequence minOccurs="1"
maxOccurs="unbounded">
        <xsd:element name="peer"
type="xsd:string"/>
        <xsd:element name="reportPolicy">
            <xsd:simpleType>
                <xsd:restriction
base="xsd:NMTOKEN">
                    <xsd:pattern
value="required"/>
                    <xsd:pattern
value="optional"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:element>
```

```
        </xsd:sequence>
    </xsd:complexType>
    <xsd:element name="recipient" type="Recipient"/>
```

(Table 4)

Name	Definition
"Recipient"	Recipient
"peer"	Peer generating Event Report
"reportPolicy"	Event Report policy. If the value is "required", the peer should transmit the ER data, and if the value is "optional", the Event Report Request message is denied and the ER data can not be transmitted.

30. The Event Report Request data as recited in claim 1, wherein the Event Report Request data includes information as:

General Element	Specific Element		
Condition Descriptor	Time		
	Event	DI Related Operation	
		Peer Related Operation	
ERR Descriptor	Description	Time Stamp	
		Life Time	
		History	
		Priority Level	
	ID		
	Access Right		
ER Descriptor	ER Data Descriptor	ER ID	
		Report Data	Peer Data
			User Data
	ERR		
Delivery	Format		

Descriptor	Encryption
	Access Right
	Authentication
	Delivery Time
	Protocol
	Compression
To Whom	Peer IDs
	User IDs

31. The Event Report Request data as recited in claim 1, wherein the Event Report Request data includes information as:

General Element	Specific Element	
Condition Descriptor	Time	
	DI Related Operation	
	Peer Related Operation	
ERR Descriptor	Description	Time Stamp
		Life Time
		History
		Priority Level
	ID	
	Access Right	
ER Descriptor	ER Data Descriptor	ER ID
		Report Data
		Access Right
		Format
	ERR	
Delivery Descriptor	To Whom	Peer IDs
		User IDs
	Delivery Time	
	How	Encryption
		Authentication

		Protocol
		Compression

32. An Event Report data for reporting an Event occurred in accordance with use of a digital item, wherein the Event Report data provides information specified in an Event Report Request data, the Event Report data comprising:

ER Descriptor describing contents and formats of the Event Report data; and

Source Descriptor describing information on a source generating the Event Report data.

33. The Event Report data as recited in claim 32, further comprising:

ER Report data describing reportable information corresponding to items requested by the Event Report Request data.

34. The Event Report data as recited in claim 33, further comprising:

Additional Action Descriptor describing additional actions related to generation, transmission and reception of the Event Report data corresponding to the Event Report Request data.

35. The Event Report data as recited in claim 34, wherein the ER Descriptor includes:

identification (ID) of the Event Report data; and

description information describing attributes of the Event Report data.

36. The Event Report data as recited in claim 35, wherein the Source Descriptor includes:

ER Peer ID describing identification (ID) of the peer who generates the Event Report data at the first; and

Original ERR describing information on the Event Report Request data requesting to generate the Event Report data.

36. The Event Report data as recited in claim 35, wherein the Additional Action Descriptor includes:

ERR describing another Event Report Request data requesting an operation, e.g., an acknowledgement, forwarding or merging of the Event Report data; and

ER describing another Event Report data to be linked to the Event Report data.

38. The Event Report data as recited in claim 37, wherein the description information includes:

Format describing a format of data used for generating the Event Report data;

Encryption describing an encryption algorithm for encrypting the Event Report data;

Compression describing a compression algorithm for compressing the Event Report data;

Access Right describing an access right of the Event Report data;

Authentication describing an authentication algorithm for authenticating the Event Report data;

History describing a history of changes or modification of the Event Report data;

Priority Level describing the priority level to the Event Report data, wherein the priority level is used by the recipient to handle Event Report data; and

Time Stamp describing a time on which the Event Report data is generated.

39. The Event Report data as recited in claim 37,

wherein the Event Report Report Data embeds or refers reportable information specified in the Event Report Request data.

40. The Event Report data as recited in claim 39, wherein the Original ERR embeds or refers the Event Report Request data requesting to generate the Event Report data.

41. The Event Report data as recited in claim 40, wherein the ERR embeds or refers another Event Report Request data related to the Event Report data.

42. The Event Report data as recited in claim 41, wherein the ER embeds or refers another Event Report data related to the Event Report data.

43. The Event Report data as recited in claim 42, wherein the ER Descriptor further includes ER Status information describing status of the Event Report data.

44. The Event Report data as recited in claim 32, wherein the Event Report data includes information as:

General Element	Specific Element
ER Descriptor	ID
	Format
	Encryption
	Access Right
	Authenticate
	Compression
	History
	Priority Level
	Time Stamp
Source Descriptor	ER Peer ID
	Original ERR

ER Report Data	
Additional Action Descriptor	ERR
	ER

45. An Event Reporting system for processing an Event Report data in order to report an Event occurred in accordance with use of a digital item, the Event Report system comprising:

Event Report Request processing means for generating and delivering an Event Report Request data requesting to report an Event in response to user's request; and

Event Report processing means for generating and delivering an Event Report data reporting the Event specified in the Event Report Request data.

46. The Event Reporting system as recited in claim 45, wherein said Event Report Request processing means includes:

Event Report Request generation means for generating the Event Report Request data;

Event Report Request transmission means for transmitting the Event Report Request data;

Event Report Request receiving means for receiving an Event Report Request data;

Event Report Request analysis means for the Event Report Request data received in the Event Report Request receiving means; and

Event occurrence monitoring means for monitoring whether or not an Event occurs.

47. The Event Reporting system as recited in claim 46, wherein said Event Report processing means includes:

Event Report generation means for generating the Event Report data;

Event Report transmission means for transmitting the

Event Report data;

Event Report receiving means for receiving an Event Report data; and

Event Report Request analysis means for the Event Report data received in the Event Report receiving means.

48. The Event Reporting system as recited in claim 47, wherein the Event Report Request data includes Delivery Time information describing time for delivering the Event Report data,

wherein the Delivery Time information includes:

a specific time;

an elapsed time; and

a periodic time.

49. The Event Reporting system as recited in claim 48, wherein the specific time includes information requesting to transmit the Event Report data at least one of on a first time, after the first time, before a second time and between the first time and the second time.

50. The Event Reporting system as recited in claim 49, wherein the elapsed time includes information requesting to transmit the Event Report data at least one of after on, before after a third time, before a fourth time and between the third time and the fourth time.

51. The Event Reporting system as recited in claim 50, further comprising Time information describing time on which the Event occurs,

wherein the Time information includes:

a specific time;

an elapsed time; and

a periodic time.

52. The Event Reporting system as recited in claim 51, wherein the specific time includes information on which the Event occurs at least one of on a first time, after the first time, before a second time and between the first time and the second time.

53. The Event Reporting system as recited in claim 52, wherein the elapsed time includes information on which the Event occurs at least one of after on, before after a third time, before a fourth time and between the third time and the fourth time.

54. The Event Reporting system as recited in claim 53, further comprising To Whom information,

wherein the To Whom information includes:

a mandatory recipient to whom the Event Report data is transmitted in mandatory; and

an optional recipient to whom the Event Report data is transmitted in optional.

55. The Event Reporting system as recited in claim 54, wherein based on schema of eXtensible Markup Language (XML), syntax of the Delivery time information is defined as:

(Table 1)

```
<xsd:complexType name="DeliveryTime">
    <xsd:choice minOccurs="0">
        <xsd:element name="specificTime"
type="SpecificTime"/>
        <xsd:element name="elapsedTime"
type="ElapsedTime"/>
        <xsd:element name="periodicTime"
type="PeriodicTime"/>
    </xsd:choice>
</xsd:complexType>
```

```
<xsd:complexType name="SpecificTime">
    <xsd:choice>
        <xsd:element name="onTime"
type="xsd:dateTime"/>
        <xsd:sequence>
            <xsd:element name="afterOn"
type="xsd:dateTime" minOccurs="0"/>
            <xsd:element name="beforeOn"
type="xsd:dateTime" minOccurs="0"/>
        </xsd:sequence>
    </xsd:choice>
    </xsd:complexType>
    <xsd:complexType name="ElapsedTime">
        <xsd:sequence>
            <xsd:element name="beginElapse"
type="BeginElapse" minOccurs="0"/>
            <xsd:element name="endElapse"
type="EndElapse" minOccurs="0"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="BeginElapse">
        <xsd:choice>
            <xsd:element name="sTime"
type="xsd:time"/>
            <xsd:element name="sDuration"
type="xsd:duration"/>
        </xsd:choice>
    </xsd:complexType>
    <xsd:complexType name="EndElapse">
        <xsd:choice>
            <xsd:element name="eTime"
type="xsd:time"/>
            <xsd:element name="eDuration"
type="xsd:duration"/>
        </xsd:choice>
```

```
        </xsd:complexType>
        <xsd:complexType name="PeriodicTime">
            <xsd:sequence>
                <xsd:element name="start"
type="xsd:dateTime" minOccurs="0"/>
                <xsd:element name="period"
type="xsd:duration"/>
                <xsd:element name="phase"
type="xsd:duration" minOccurs="0"/>
                <xsd:element name="duration"
type="xsd:duration"/>
                <xsd:element name="periodCount"
type="xsd:duration"/>
            </xsd:sequence>
        </xsd:complexType>

        <xsd:element name="deliveryTime"
type="DeliveryTime"/>
```

(Table 2)

Name	Definition
"DeliveryTime"	Delivery Time Information
"SpecificTime"	Specific time to transmit ER data
"ElapsedTime"	Elapsed time to transmit ER data
"PeriodicTime"	Periodic Time to transmit ER data
"onTime"	Time at which ER data should be transmitted
"afterOn"	After a time at which ER data should be transmitted
"beforeOn"	Before a time at which ER data should be transmitted
"beginElapse"	Reference time when elapsed time for transmitting the ER data begins. If there is no beginElapse, the reference

	time is Event occurrence time
"endElapse"	End time of elapsed time by which delivery of the Event Report data is ended
"sTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"sDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"eTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends
"endDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends

56. The Event Reporting system as recited in claim 55, wherein based on schema of eXtensible Markup Language (XML), syntax of the To Whom information is defined as:

(Table 3)

```
<xsd:complexType name="Recipient">
    <xsd:sequence minOccurs="1"
maxOccurs="unbounded">
        <xsd:element name="peer"
type="xsd:string"/>
        <xsd:element name="reportPolicy">
            <xsd:simpleType>
                <xsd:restriction
base="xsd:NMTOKEN">
```

```
                                        <xsd:pattern
value="required"/>
                                        <xsd:pattern
value="optional"/>
                                    </xsd:restriction>
                                </xsd:simpleType>
                            </xsd:element>
                        </xsd:sequence>
                    </xsd:complexType>
                    <xsd:element name="recipient" type="Recipient"/>
```

(Table 4)

Name	Definition
"Recipient"	Recipient
"peer"	Peer generating Event Report
"reportPolicy"	Event Report policy. If the value is "required", the peer should transmit the ER data, and if the value is "optional", the Event Report Request message is denied and the ER data can not be transmitted.

57. The Event Reporting system as recited in claim 56, wherein the Event Report data includes:

ER Descriptor describing contents and formats of the Event Report data;

Source Descriptor describing information on a source generating the Event Report data;

ER Report data describing reportable information corresponding to items requested by the Event Report Request data; and

Additional Action Descriptor describing additional actions related to generation, transmission and reception of the Event Report data corresponding to the Event Report Request data.

58. The Event Reporting system as recited in claim 57, wherein the ER Descriptor includes:

identification (ID) of the Event Report data; and

description information describing attributes of the Event Report data.

59. The Event Reporting system as recited in claim 58, wherein the Source Descriptor includes:

ER Peer ID describing identification (ID) of the peer who generates the Event Report data at the first; and

Original ERR describing information on the Event Report Request data requesting to generate the Event Report data.

60. The Event Reporting system as recited in claim 59, wherein the Additional Action Descriptor includes:

ERR describing another Event Report Request data requesting an operation, e.g., an acknowledgement, forwarding or merging of the Event Report data; and

ER describing another Event Report data to be linked to the Event Report data.

61. The Event Reporting system as recited in claim 60, wherein the description information includes:

Format describing a format of data used for generating the Event Report data;

Encryption describing an encryption algorithm for encrypting the Event Report data;

Compression describing a compression algorithm for compressing the Event Report data;

Access Right describing an access right of the Event Report data;

Authentication describing an authentication algorithm for authenticating the Event Report data;

History describing a history of changes or modification of the Event Report data;

Priority Level describing the priority level to the Event Report data, wherein the priority level is used by the recipient to handle Event Report data; and

Time Stamp describing a time on which the Event Report data is generated.

62. The Event Reporting system as recited in claim 61, wherein the ER Report Data embeds or refers reportable information specified in the Event Report Request data.

63. The Event Reporting system as recited in claim 62, wherein the Original ERR embeds or refers the Event Report Request data requesting to generate the Event Report data.

64. The Event Reporting system as recited in claim 63, wherein the ERR embeds or refers another Event Report Request data related to the Event Report data.

65. The Event Reporting system as recited in claim 64, wherein the ER embeds or refers another Event Report data related to the Event Report data.

66. The Event Reporting system request data as recited in claim 48, wherein the Event Report Request data includes information as:

<table>
<tr><td>General Element</td><td colspan="2">Specific Element</td></tr>
<tr><td rowspan="3">Condition Descriptor</td><td colspan="2">Time</td></tr>
<tr><td rowspan="2">Event</td><td>DI Related Operation</td></tr>
<tr><td>Peer Related Operation</td></tr>
<tr><td rowspan="4">ERR Descriptor</td><td rowspan="4">Description</td><td>Time Stamp</td></tr>
<tr><td>Life Time</td></tr>
<tr><td>History</td></tr>
<tr><td>Priority Level</td></tr>
</table>

	ID		
	Access Right		
ER Descriptor	ER Data Descriptor	ER ID	
		Report Data	Peer Data
			User Data
	ERR		
Delivery Descriptor	Format		
	Encryption		
	Access Right		
	Authentication		
	Delivery Time		
	Protocol		
	Compression		
To Whom	Peer IDs		
	User IDs		

67. The Event Reporting system data as recited in claim 48, wherein the Event Report Request data includes information as:

General Element	Specific Element	
Condition Descriptor	Time	
	DI Related Operation	
	Peer Related Operation	
ERR Descriptor	Description	Time Stamp
		Life Time
		History
		Priority Level
	ID	
	Access Right	
ER Descriptor	ER Data Descriptor	ER ID
		Report Data
		Access Right

		Format
	ERR	
Delivery Descriptor	To Whom	Peer IDs
		User IDs
	Delivery Time	
	How	Encryption
		Authentication
		Protocol
		Compression

68. The Event Reporting system data as recited in claim 67, wherein the Event Report data includes information as:

General Element	Specific Element
ER Descriptor	ID
	Format
	Encryption
	Access Right
	Authenticate
	Compression
	History
	Priority Level
	Time Stamp
Source Descriptor	ER Peer ID
	Original ERR
ER Report Data	
Additional Action Descriptor	ERR
	ER

69. An apparatus for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the apparatus comprising:

Event Report Request generation means for generating the Event Report Request data;

Event Report Request transmission means for transmitting the Event Report Request data;

Event Report Request receiving means for receiving an Event Report Request data;

Event Report Request analysis means for the Event Report Request data received in the Event Report Request receiving means; and

Event occurrence monitoring means for monitoring whether or not an Event occurs.

70. An apparatus for processing an Event Report data in order to report an Event occurred in accordance with use of a digital item, the apparatus comprising:

Event Report generation means for generating the Event Report data;

Event Report transmission means for transmitting the Event Report data;

Event Report receiving means for receiving an Event Report data; and

Event Report Request analysis means for the Event Report data received in the Event Report receiving means.

71. A method for processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the method system comprising the steps of:

a) generating and delivering an Event Report Request data requesting to report an Event, receiving an Event

Report request data from an outside and analyzing the Event Report Request data received from the outside, and monitoring whether or not the Event specified in the Event Report Request data received from the outside; and

b) Event Report processing means for generating and delivering an Event Report data reporting the Event specified in the Event Report Request data, analyzing an Event Report data received from an outside, and delivering an analysis result.

72. The method as recited in claim 71, wherein the step a) includes the steps of:

generating the Event Report Request data;

transmitting the Event Report Request data;

receiving an Event Report Request data from the outside;

analyzing the Event Report Request data received from the outside; and

monitoring whether or not the Event specified in the Event Report Request data received from the outside occurs.

73. The method as recited in claim 72, wherein the step b) includes the steps of:

generating the Event Report data;

transmitting the Event Report data;

receiving an Event Report data received from the outside;

analyzing the Event Report data received from the outside.

74. The method as recited in claim 73, wherein the Event Report Request data includes Delivery Time information describing time for transmitting the Event Report data,

wherein the Delivery Time information includes:

a specific time;
an elapsed time; and
a periodic time.

75. The method as recited in claim 74, wherein the specific time includes information requesting to transmit the Event Report data at least one of on a first time, after the first time, before a second time and between the first time and the second time.

76. The method as recited in claim 75, wherein the elapsed time includes information requesting to transmit the Event Report data at least one of after on, before after a third time, before a fourth time and between the third time and the fourth time.

77. The method as recited in claim 76, further comprising Time information describing time on which the Event occurs,
wherein the Time information includes:
a specific time;
an elapsed time; and
a periodic time.

78. The method as recited in claim 77, wherein the specific time includes information on which the Event occurs at least one of on a first time, after the first time, before a second time and between the first time and the second time.

79. The method as recited in claim 78, wherein the elapsed time includes information on which the Event occurs at least one of after on, before after a third time, before a fourth time and between the third time and the fourth time.

80. The method as recited in claim 79, wherein the Event Report Request data further includes To Whom information,

wherein the To Whom information includes:

a mandatory recipient to whom the Event Report data is transmitted in mandatory; and

an optional recipient to whom the Event Report data is transmitted in optional.

81. The Event Reporting method as recited in claim 80, wherein based on schema of eXtensible Markup Language (XML), syntax of the Delivery time information is defined as:

(Table 1)

```
<xsd:complexType name="DeliveryTime">
    <xsd:choice minOccurs="0">
        <xsd:element name="specificTime"
type="SpecificTime"/>
        <xsd:element name="elapsedTime"
type="ElapsedTime"/>
        <xsd:element name="periodicTime"
type="PeriodicTime"/>
    </xsd:choice>
</xsd:complexType>
<xsd:complexType name="SpecificTime">
    <xsd:choice>
        <xsd:element name="onTime"
type="xsd:dateTime"/>
        <xsd:sequence>
            <xsd:element name="afterOn"
type="xsd:dateTime" minOccurs="0"/>
            <xsd:element name="beforeOn"
type="xsd:dateTime" minOccurs="0"/>
        </xsd:sequence>
```

```
        </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="ElapsedTime">
              <xsd:sequence>
                    <xsd:element name="beginElapse"
type="BeginElapse" minOccurs="0"/>
                    <xsd:element name="endElapse"
type="EndElapse" minOccurs="0"/>
              </xsd:sequence>
        </xsd:complexType>
        <xsd:complexType name="BeginElapse">
              <xsd:choice>
                    <xsd:element name="sTime"
type="xsd:time"/>
                    <xsd:element name="sDuration"
type="xsd:duration"/>
              </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="EndElapse">
              <xsd:choice>
                    <xsd:element name="eTime"
type="xsd:time"/>
                    <xsd:element name="eDuration"
type="xsd:duration"/>
              </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="PeriodicTime">
              <xsd:sequence>
                    <xsd:element name="start"
type="xsd:dateTime" minOccurs="0"/>
                    <xsd:element name="period"
type="xsd:duration"/>
                    <xsd:element name="phase"
type="xsd:duration" minOccurs="0"/>
                    <xsd:element name="duration"
```

```
type="xsd:duration"/>
                <xsd:element name="periodCount"
type="xsd:duration"/>
            </xsd:sequence>
        </xsd:complexType>

        <xsd:element name="deliveryTime"
type="DeliveryTime"/>
```

(Table 2)

Name	Definition
"DeliveryTime"	Delivery Time Information
"SpecificTime"	Specific time to transmit ER data
"ElapsedTime"	Elapsed time to transmit ER data
"PeriodicTime"	Periodic Time to transmit ER data
"onTime"	Time at which ER data should be transmitted
"afterOn"	After a time at which ER data should be transmitted
"beforeOn"	Before a time at which ER data should be transmitted
"beginElapse"	Reference time when elapsed time for transmitting the ER data begins. If there is no beginElapse, the reference time is Event occurrence time
"endElapse"	End time of elapsed time by which delivery of the Event Report data is ended
"sTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"sDuration"	Duration after specific time of a day on which an Event occurs, the specific

	time at which delivery of an Event Report data for the Event starts
"eTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends
"endDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends

82. The method as recited in claim 81, wherein based on schema of eXtensible Markup Language (XML), syntax of the To Whom information is defined as:

(Table 3)

```
<xsd:complexType name="Recipient">
    <xsd:sequence minOccurs="1" maxOccurs="unbounded">
        <xsd:element name="peer" type="xsd:string"/>
        <xsd:element name="reportPolicy">
            <xsd:simpleType>
                <xsd:restriction base="xsd:NMTOKEN">
                    <xsd:pattern value="required"/>
                    <xsd:pattern value="optional"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:element name="recipient" type="Recipient"/>
```

(Table 4)

Name	Definition
"Recipient"	Recipient
"peer"	Peer generating Event Report
"reportPolicy"	Event Report policy. If the value is "required", the peer should transmit the ER data, and if the value is "optional", the Event Report Request message is denied and the ER data can not be transmitted.

83. The method as recited in claim 82, wherein the Event Report data includes:

ER Descriptor describing contents and formats of the Event Report data;

Source Descriptor describing information on a source generating the Event Report data;

ER Report data describing reportable information corresponding to items requested by the Event Report Request data; and

Additional Action Descriptor describing additional actions related to generation, transmission and reception of the Event Report data corresponding to the Event Report Request data.

84. The method as recited in claim 83, wherein the ER Descriptor includes:

identification (ID) of the Event Report data; and

description information describing attributes of the Event Report data.

85. The method as recited in claim 84, wherein the Source Descriptor includes:

ER Peer ID describing identification (ID) of the peer

who generates the Event Report data at the first; and

Original ERR describing information on the Event Report Request data requesting to generate the Event Report data.

86. The method as recited in claim 85, wherein the Additional Action Descriptor includes:

ERR describing another Event Report Request data requesting an operation, e.g., an acknowledgement, forwarding or merging of the Event Report data; and

ER describing another Event Report data to be linked to the Event Report data.

87. The method as recited in claim 86, wherein the description information includes:

Format describing a format of data used for generating the Event Report data;

Encryption describing an encryption algorithm for encrypting the Event Report data;

Compression describing a compression algorithm for compressing the Event Report data;

Access Right describing an access right of the Event Report data;

Authentication describing an authentication algorithm for authenticating the Event Report data;

History describing a history of changes or modification of the Event Report data;

Priority Level describing the priority level to the Event Report data, wherein the priority level is used by the recipient to handle Event Report data; and

Time Stamp describing a time on which the Event Report data is generated.

88. The method as recited in claim 73, wherein the Event Report Request data includes information as:

General Element	Specific Element		
Condition Descriptor	Time		
	Event	DI Related Operation	
		Peer Related Operation	
ERR Descriptor	Description	Time Stamp	
		Life Time	
		History	
		Priority Level	
	ID		
	Access Right		
ER Descriptor	ER Data Descriptor	ER ID	
		Report Data	Peer Data
			User Data
	ERR		
Delivery Descriptor	Format		
	Encryption		
	Access Right		
	Authentication		
	Delivery Time		
	Protocol		
	Compression		
To Whom	Peer IDs		
	User IDs		

89. The method as recited in claim 73, wherein the Event Report Request data includes information as:

General Element	Specific Element	
Condition Descriptor	Time	
	DI Related Operation	
	Peer Related Operation	
ERR Descriptor	Description	Time Stamp

		Life Time
		History
		Priority Level
	ID	
	Access Right	
ER Descriptor	ER Data Descriptor	ER ID
		Report Data
		Access Right
		Format
	ERR	
Delivery Descriptor	To Whom	Peer IDs
		User IDs
	Delivery Time	
	How	Encryption
		Authentication
		Protocol
		Compression

90. The method as recited in claim 89, wherein the Event Report data includes information as:

General Element	Specific Element
ER Descriptor	ID
	Format
	Encryption
	Access Right
	Authenticate
	Compression
	History
	Priority Level

	Time Stamp
Source Descriptor	ER Peer ID
	Original ERR
ER Report Data	
Additional Action Descriptor	ERR
	ER

91. A method for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the method comprising steps of:

a) generating and delivering the Event Report Request data; and

b) receiving an Event Report Request data from an outside, analyzing the Event Report Request data received from the outside and monitoring whether or not an Event specified in the Event Report Request data received from the outside occurs.

92. The method as recited in claim 91, wherein the Event Report Request data includes Delivery Time information describing time for transmitting the Event Report data,

wherein the Delivery Time information includes:

a specific time;

an elapsed time; and

a periodic time.

93. The Event Reporting method as recited in claim 92, wherein based on schema of eXtensible Markup Language (XML), syntax of the Delivery time information is defined as:

(Table 1)

```
<xsd:complexType name="DeliveryTime">
    <xsd:choice minOccurs="0">
```

```
                <xsd:element name="specificTime"
type="SpecificTime"/>
                <xsd:element name="elapsedTime"
type="ElapsedTime"/>
                <xsd:element name="periodicTime"
type="PeriodicTime"/>
            </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="SpecificTime">
            <xsd:choice>
                <xsd:element name="onTime"
type="xsd:dateTime"/>
                <xsd:sequence>
                    <xsd:element name="afterOn"
type="xsd:dateTime" minOccurs="0"/>
                    <xsd:element name="beforeOn"
type="xsd:dateTime" minOccurs="0"/>
                </xsd:sequence>
        </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="ElapsedTime">
            <xsd:sequence>
                <xsd:element name="beginElapse"
type="BeginElapse" minOccurs="0"/>
                <xsd:element name="endElapse"
type="EndElapse" minOccurs="0"/>
            </xsd:sequence>
        </xsd:complexType>
        <xsd:complexType name="BeginElapse">
            <xsd:choice>
                <xsd:element name="sTime"
type="xsd:time"/>
                <xsd:element name="sDuration"
type="xsd:duration"/>
            </xsd:choice>
```

```
        </xsd:complexType>
        <xsd:complexType name="EndElapse">
            <xsd:choice>
                <xsd:element name="eTime"
type="xsd:time"/>
                <xsd:element name="eDuration"
type="xsd:duration"/>
            </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="PeriodicTime">
            <xsd:sequence>
                <xsd:element name="start"
type="xsd:dateTime" minOccurs="0"/>
                <xsd:element name="period"
type="xsd:duration"/>
                <xsd:element name="phase"
type="xsd:duration" minOccurs="0"/>
                <xsd:element name="duration"
type="xsd:duration"/>
                <xsd:element name="periodCount"
type="xsd:duration"/>
            </xsd:sequence>
        </xsd:complexType>

        <xsd:element name="deliveryTime"
type="DeliveryTime"/>
```

(Table 2)

Name	Definition
"DeliveryTime"	Delivery Time Information
"SpecificTime"	Specific time to transmit ER data
"ElapsedTime"	Elapsed time to transmit ER data
"PeriodicTime"	Periodic Time to transmit ER data
"onTime"	Time at which ER data should be

	transmitted
"afterOn"	After a time at which ER data should be transmitted
"beforeOn"	Before a time at which ER data should be transmitted
"beginElapse"	Reference time when elapsed time for transmitting the ER data begins. If there is no beginElapse, the reference time is Event occurrence time
"endElapse"	End time of elapsed time by which delivery of the Event Report data is ended
"sTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"sDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"eTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends
"endDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends

94. The method as recited in claim 93, wherein the Event Report data includes:

ER Descriptor describing identification and characteristics of the Event Report data;

Source Descriptor describing a source generating the Event Report data;

ER Report Data describing reportable information corresponding to items requested by the EVENT REPORT REQUEST data; and

Additional Action Descriptor describing additional actions related to generation, transmission and reception of the Event Report data corresponding to the Event Report Request data

95. The method as recited in claim 92, wherein the Event Report Request data includes information as:

<table>
<tr><th>General Element</th><th colspan="3">Specific Element</th></tr>
<tr><td rowspan="3">Condition Descriptor</td><td colspan="3">Time</td></tr>
<tr><td rowspan="2">Event</td><td colspan="2">DI Related Operation</td></tr>
<tr><td colspan="2">Peer Related Operation</td></tr>
<tr><td rowspan="6">ERR Descriptor</td><td rowspan="4">Description</td><td colspan="2">Time Stamp</td></tr>
<tr><td colspan="2">Life Time</td></tr>
<tr><td colspan="2">History</td></tr>
<tr><td colspan="2">Priority Level</td></tr>
<tr><td colspan="3">ID</td></tr>
<tr><td colspan="3">Access Right</td></tr>
<tr><td rowspan="4">ER Descriptor</td><td rowspan="3">ER Data Descriptor</td><td colspan="2">ER ID</td></tr>
<tr><td rowspan="2">Report Data</td><td>Peer Data</td></tr>
<tr><td>User Data</td></tr>
<tr><td colspan="3">ERR</td></tr>
<tr><td rowspan="7">Delivery Descriptor</td><td colspan="3">Format</td></tr>
<tr><td colspan="3">Encryption</td></tr>
<tr><td colspan="3">Access Right</td></tr>
<tr><td colspan="3">Authentication</td></tr>
<tr><td colspan="3">Delivery Time</td></tr>
<tr><td colspan="3">Protocol</td></tr>
<tr><td colspan="3">Compression</td></tr>
<tr><td rowspan="2">To Whom</td><td colspan="3">Peer IDs</td></tr>
<tr><td colspan="3">User IDs</td></tr>
</table>

96. The method as recited in claim 92, wherein the Event Report Request data includes information as:

General Element	Specific Element	
Condition Descriptor	Time	
	DI Related Operation	
	Peer Related Operation	
ERR Descriptor	Description	Time Stamp
		Life Time
		History
		Priority Level
	ID	
	Access Right	
ER Descriptor	ER Data Descriptor	ER ID
		Report Data
		Access Right
		Format
	ERR	
Delivery Descriptor	To Whom	Peer IDs
		User IDs
	Delivery Time	
	How	Encryption
		Authentication
		Protocol
		Compression

97. The method as recited in claim 96, wherein the Event Report data includes information as:

General Element	Specific Element
ER Descriptor	ID
	Format
	Encryption

	Access Right
	Authenticate
	Compression
	History
	Priority Level
	Time Stamp
Source Descriptor	ER Peer ID
	Original ERR
ER Report Data	
Additional Action Descriptor	ERR
	ER

98. A method for processing an Event Report data in order to report an Event occurred in accordance with use of a digital item, the method comprising the steps of:

a) generating and delivering an Event Report data to report the Event specified in an Event Report Request data; and

b) analyzing and processing an Event Report data received from an outside.

99. The method as recited in claim 98, wherein the Event Report Request data includes a specific time, an elapsed time and a periodic time on which the Event Report data is delivered.

100. The method as recited in claim 99, wherein based on schema of eXtensible Markup Language (XML), syntax of the Delivery time information is defined as:

(Table 1)

```
<xsd:complexType name="DeliveryTime">
    <xsd:choice minOccurs="0">
        <xsd:element name="specificTime"
type="SpecificTime"/>
```

```
                    <xsd:element name="elapsedTime"
type="ElapsedTime"/>
                    <xsd:element name="periodicTime"
type="PeriodicTime"/>
              </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="SpecificTime">
              <xsd:choice>
                    <xsd:element name="onTime"
type="xsd:dateTime"/>
                    <xsd:sequence>
                          <xsd:element name="afterOn"
type="xsd:dateTime" minOccurs="0"/>
                          <xsd:element name="beforeOn"
type="xsd:dateTime" minOccurs="0"/>
                    </xsd:sequence>
        </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="ElapsedTime">
              <xsd:sequence>
                    <xsd:element name="beginElapse"
type="BeginElapse" minOccurs="0"/>
                    <xsd:element name="endElapse"
type="EndElapse" minOccurs="0"/>
              </xsd:sequence>
        </xsd:complexType>
        <xsd:complexType name="BeginElapse">
              <xsd:choice>
                    <xsd:element name="sTime"
type="xsd:time"/>
                    <xsd:element name="sDuration"
type="xsd:duration"/>
              </xsd:choice>
        </xsd:complexType>
        <xsd:complexType name="EndElapse">
```

```
            <xsd:choice>
                  <xsd:element name="eTime"
type="xsd:time"/>
                  <xsd:element name="eDuration"
type="xsd:duration"/>
            </xsd:choice>
      </xsd:complexType>
      <xsd:complexType name="PeriodicTime">
            <xsd:sequence>
                  <xsd:element name="start"
type="xsd:dateTime" minOccurs="0"/>
                  <xsd:element name="period"
type="xsd:duration"/>
                  <xsd:element name="phase"
type="xsd:duration" minOccurs="0"/>
                  <xsd:element name="duration"
type="xsd:duration"/>
                  <xsd:element name="periodCount"
type="xsd:duration"/>
            </xsd:sequence>
      </xsd:complexType>

      <xsd:element name="deliveryTime"
type="DeliveryTime"/>
```

(Table 2)

Name	Definition
"DeliveryTime"	Delivery Time Information
"SpecificTime"	Specific time to transmit ER data
"ElapsedTime"	Elapsed time to transmit ER data
"PeriodicTime"	Periodic Time to transmit ER data
"onTime"	Time at which ER data should be transmitted
"afterOn"	After a time at which ER data

	should be transmitted
"beforeOn"	Before a time at which ER data should be transmitted
"beginElapse"	Reference time when elapsed time for transmitting the ER data begins. If there is no beginElapse, the reference time is Event occurrence time
"endElapse"	End time of elapsed time by which delivery of the Event Report data is ended
"sTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"sDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event starts
"eTime"	Specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends
"endDuration"	Duration after specific time of a day on which an Event occurs, the specific time at which delivery of an Event Report data for the Event ends

101. The method as recited in claim 100, wherein the Event Report data includes:

ER Descriptor describing identification and characteristics of the Event Report data;

Source Descriptor describing a source generating the

Event Report data;

ER Report Data describing reportable information corresponding to items requested by the Event Report Request data; and

Additional Action Descriptor describing additional actions related to generation, transmission and reception of the Event Report data corresponding to the Event Report Request data

102. The method as recited in claim 99, wherein the Event Report Request data includes information as:

<table>
<tr><td>General Element</td><td colspan="3">Specific Element</td></tr>
<tr><td rowspan="3">Condition Descriptor</td><td colspan="3">Time</td></tr>
<tr><td rowspan="2">Event</td><td colspan="2">DI Related Operation</td></tr>
<tr><td colspan="2">Peer Related Operation</td></tr>
<tr><td rowspan="6">ERR Descriptor</td><td rowspan="4">Description</td><td colspan="2">Time Stamp</td></tr>
<tr><td colspan="2">Life Time</td></tr>
<tr><td colspan="2">History</td></tr>
<tr><td colspan="2">Priority Level</td></tr>
<tr><td colspan="3">ID</td></tr>
<tr><td colspan="3">Access Right</td></tr>
<tr><td rowspan="4">ER Descriptor</td><td rowspan="3">ER Data Descriptor</td><td colspan="2">ER ID</td></tr>
<tr><td rowspan="2">Report Data</td><td>Peer Data</td></tr>
<tr><td>User Data</td></tr>
<tr><td colspan="3">ERR</td></tr>
<tr><td rowspan="7">Delivery Descriptor</td><td colspan="3">Format</td></tr>
<tr><td colspan="3">Encryption</td></tr>
<tr><td colspan="3">Access Right</td></tr>
<tr><td colspan="3">Authentication</td></tr>
<tr><td colspan="3">Delivery Time</td></tr>
<tr><td colspan="3">Protocol</td></tr>
<tr><td colspan="3">Compression</td></tr>
<tr><td rowspan="2">To Whom</td><td colspan="3">Peer IDs</td></tr>
<tr><td colspan="3">User IDs</td></tr>
</table>

103. The method as recited in claim 99, wherein the Event Report Request data includes information as:

General Element	Specific Element	
Condition Descriptor	Time	
	DI Related Operation	
	Peer Related Operation	
ERR Descriptor	Description	Time Stamp
		Life Time
		History
		Priority Level
	ID	
	Access Right	
ER Descriptor	ER Data Descriptor	ER ID
		Report Data
		Access Right
		Format
	ERR	
Delivery Descriptor	To Whom	Peer IDs
		User IDs
	Delivery Time	
	How	Encryption
		Authentication
		Protocol
		Compression

104. The Event Report data processing method as recited in claim 103, wherein the Event Report data includes information as:

General Element	Specific Element
ER Descriptor	ID
	Format

	Encryption
	Access Right
	Authenticate
	Compression
	History
	Priority Level
	Time Stamp
Source Descriptor	ER Peer ID
	Original ERR
ER Report Data	
Additional Action Descriptor	ERR
	ER

105. A computer readable recording media storing instructions for executing a method for requesting to report an Event and processing an Event Report Request data in order to report an Event occurred in accordance with use of a digital item, the method comprising steps of:

a) generating and delivering the Event Report Request data; and

b) receiving an Event Report Request data from an outside, analyzing the Event Report Request data received from the outside and monitoring whether or not an Event specified in the Event Report Request data received from the outside occurs.

FIG. 1

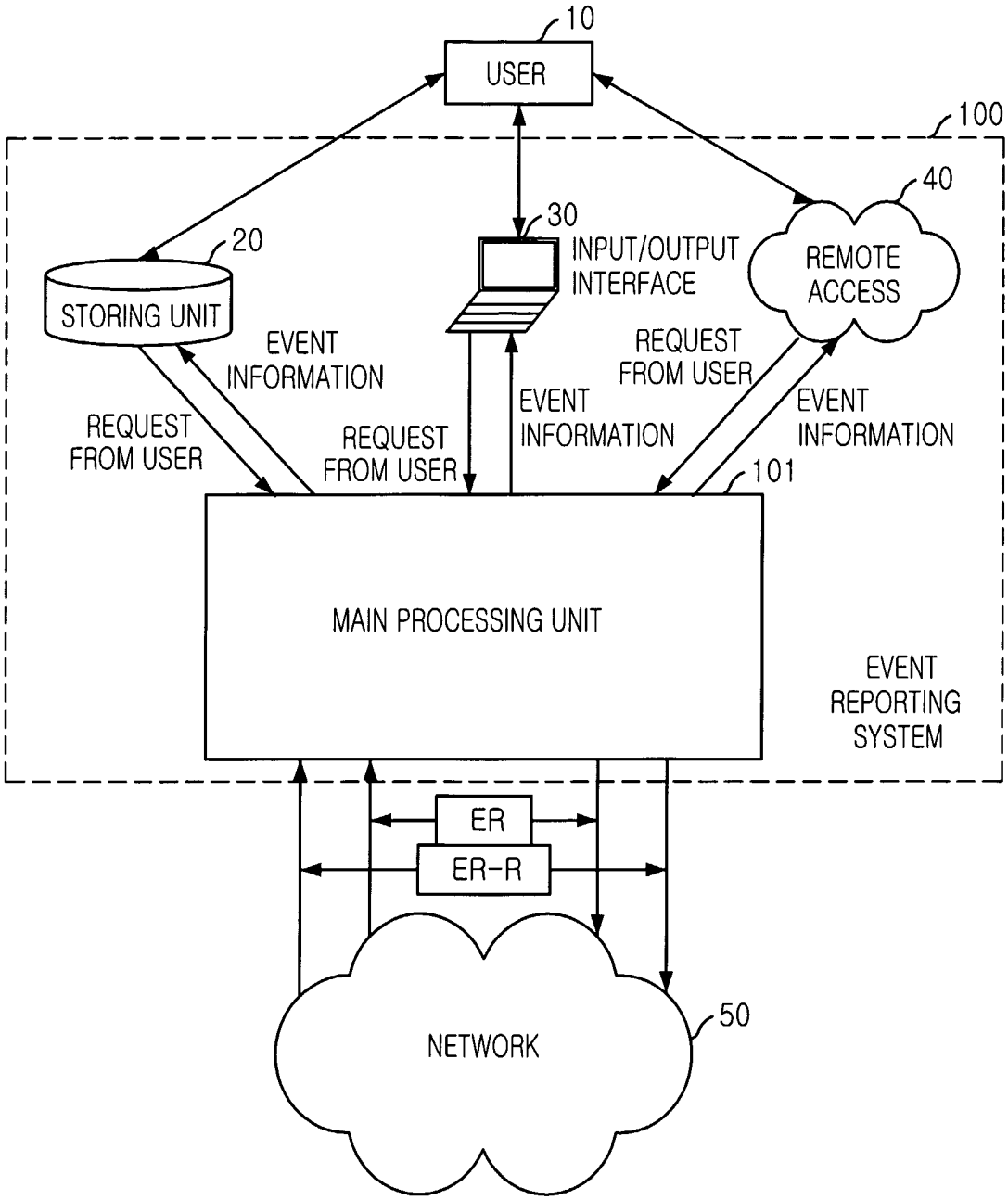

10
USER
100
40
30
20
INPUT/OUTPUT INTERFACE
REMOTE ACCESS
STORING UNIT
EVENT INFORMATION
REQUEST FROM USER
REQUEST FROM USER
EVENT INFORMATION
REQUEST FROM USER
EVENT INFORMATION
101
MAIN PROCESSING UNIT
EVENT REPORTING SYSTEM
ER
ER-R
NETWORK
50

FIG. 2

<table>
<tr><td>General Element</td><td colspan="3">Specific Element</td></tr>
<tr><td rowspan="3">Condition Descriptor</td><td colspan="3">Time</td></tr>
<tr><td rowspan="2">Event</td><td colspan="2">DI Related Operation</td></tr>
<tr><td colspan="2">Peer Related Operation</td></tr>
<tr><td rowspan="5">ERR Descriptor</td><td rowspan="4">Description</td><td colspan="2">Time Stamp</td></tr>
<tr><td colspan="2">Life Time</td></tr>
<tr><td colspan="2">History</td></tr>
<tr><td colspan="2">Priority Level</td></tr>
<tr><td colspan="3">ID</td></tr>
<tr><td colspan="3">Access Right</td></tr>
<tr><td rowspan="3">ER Descriptor</td><td rowspan="3">ER Data Descriptor</td><td colspan="2">ER ID</td></tr>
<tr><td rowspan="2">Report Data</td><td>Peer Data</td></tr>
<tr><td>User Data</td></tr>
<tr><td colspan="3">ERR</td></tr>
<tr><td rowspan="6">Delivery Descriptor</td><td colspan="3">Format</td></tr>
<tr><td colspan="3">Encryprion</td></tr>
<tr><td colspan="3">Access Right</td></tr>
<tr><td colspan="3">Authentication</td></tr>
<tr><td colspan="3">Delivery Time</td></tr>
<tr><td colspan="3">Protocol</td></tr>
<tr><td rowspan="2">To Whom</td><td colspan="3">Compression</td></tr>
<tr><td colspan="3">Peer IDs</td></tr>
<tr><td colspan="3">User IDs</td></tr>
</table>

FIG. 3

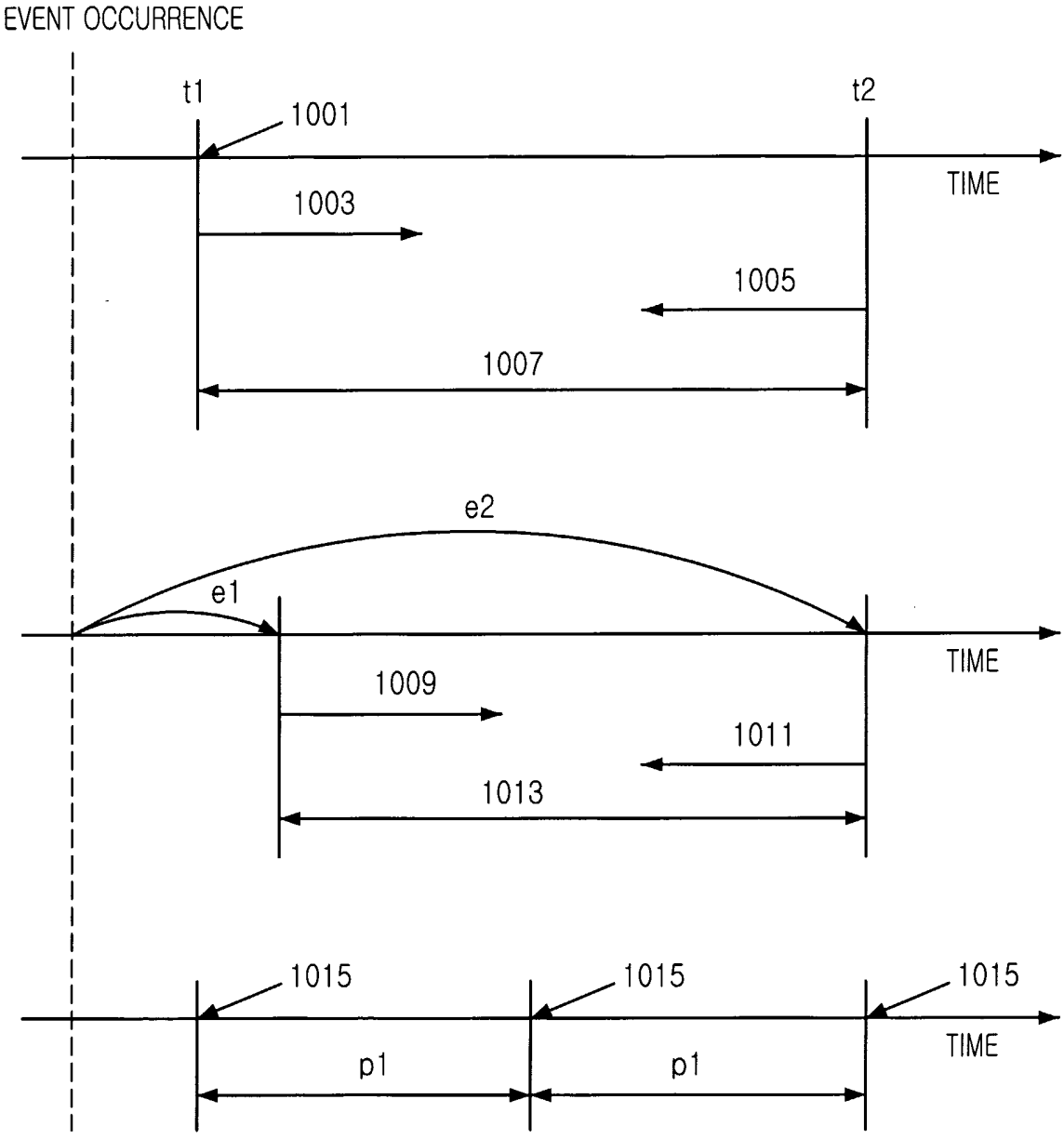

EVENT OCCURRENCE
t1
1001
t2
TIME
1003
1005
1007
e2
e1
TIME
1009
1011
1013
1015
1015
1015
TIME
p1
p1

FIG. 4

General Element	Specific Element	
Condition Descriptor	Time	
	DI Related Operation	
	Peer Related Operation	
ERR Descriptor	Description	Time Stamp
		Life Time
		History
		Priority Level
	ID	
	Access Right	
ER Descriptor	ER Data Descriptor	ER ID
		Report Data
		Access Right
		Format
	ERR	
Delivery Descriptor	To Whom	Peer IDs
		User IDs
	Delivery Time	
	How	Encryprion
		Authentication
		Protocol
		Compression

FIG. 5

General Element	Specific Element
ER Descriptor	ID
	Format
	Encryprion
	Access Right
	Authentication
	Compression
	History
	Priority Level
	Time Stamp
Source Descriptor	ER Peer ID
	Original ERR
ER Report Data	
Additional Action Descriptor	ERR
	ER

FIG. 6

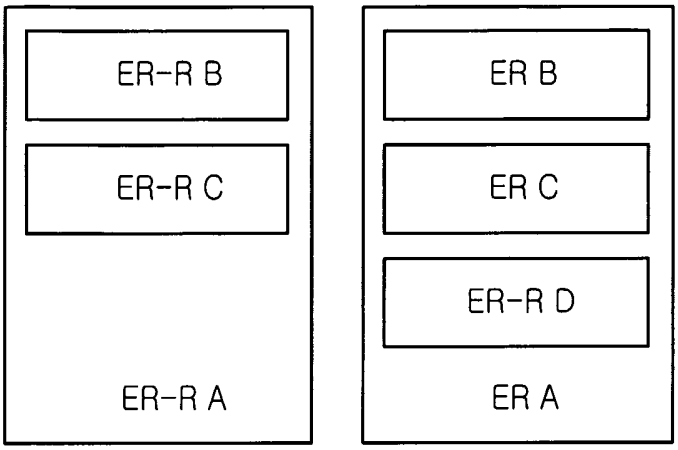

ER-R B
ER-R C
ER-R A
ER B
ER C
ER-R D
ER A

FIG. 7

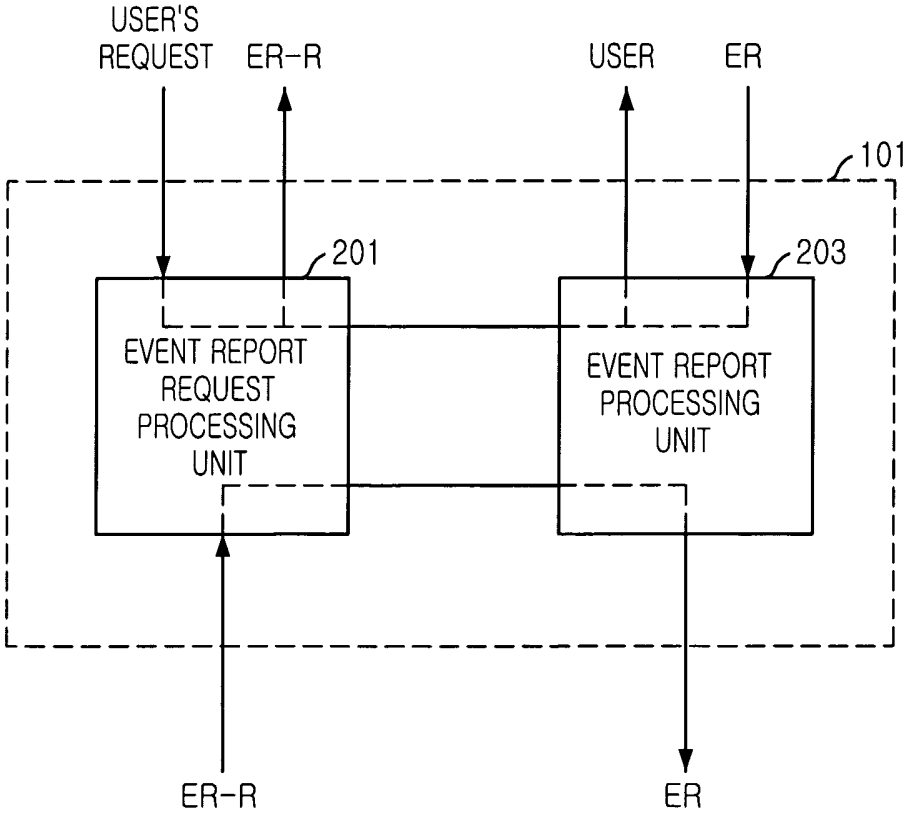

USER'S REQUEST
ER-R
USER
ER
101
201
203
EVENT REPORT REQUEST PROCESSING UNIT
EVENT REPORT PROCESSING UNIT
ER-R
ER

FIG. 8

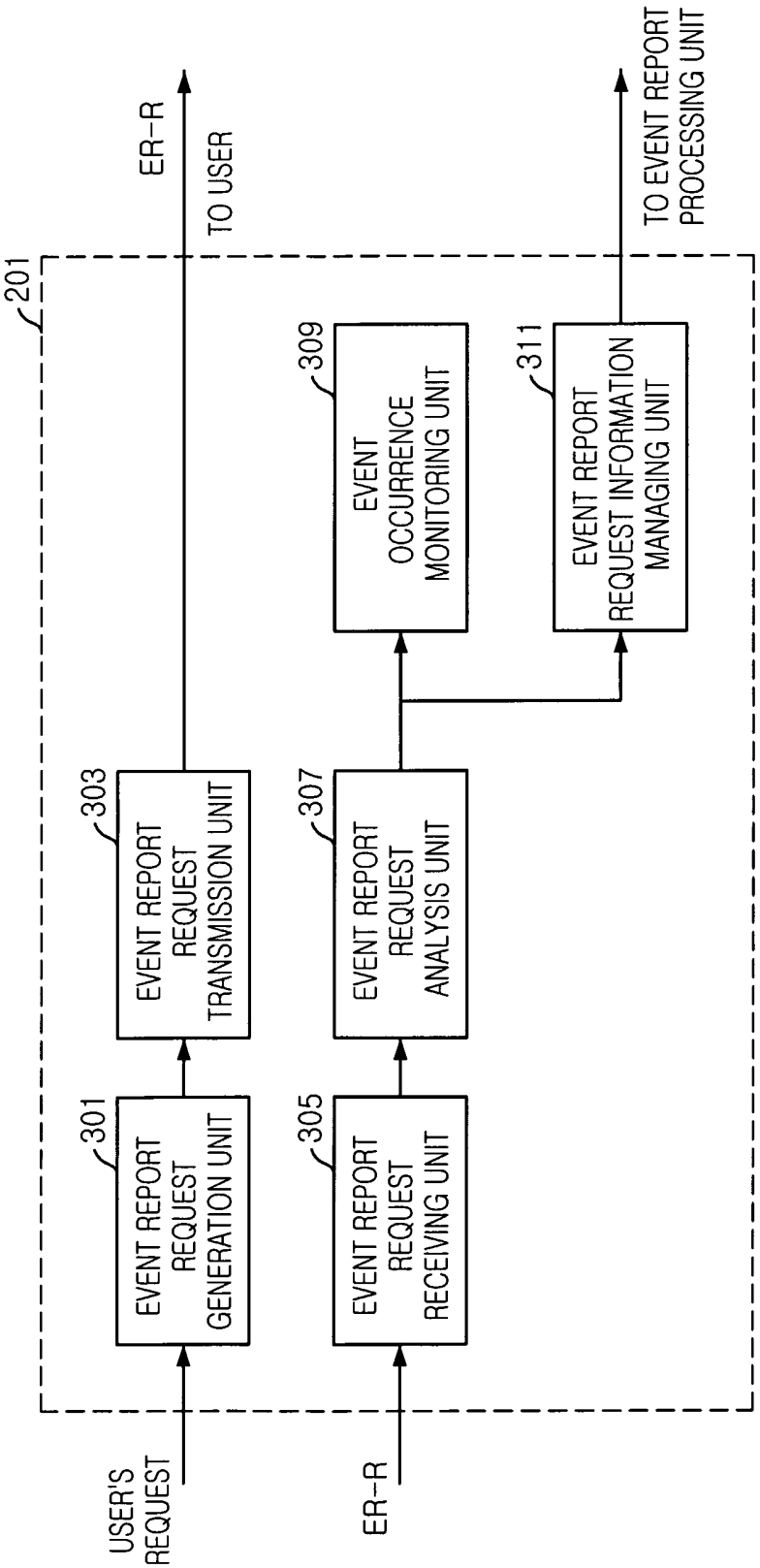

201
ER-R
TO USER
TO EVENT REPORT PROCESSING UNIT
309
EVENT OCCURRENCE MONITORING UNIT
311
EVENT REPORT REQUEST INFORMATION MANAGING UNIT
303
EVENT REPORT REQUEST TRANSMISSION UNIT
307
EVENT REPORT REQUEST ANALYSIS UNIT
301
EVENT REPORT REQUEST GENERATION UNIT
305
EVENT REPORT REQUEST RECEIVING UNIT
USER'S REQUEST
ER-R

FIG. 9

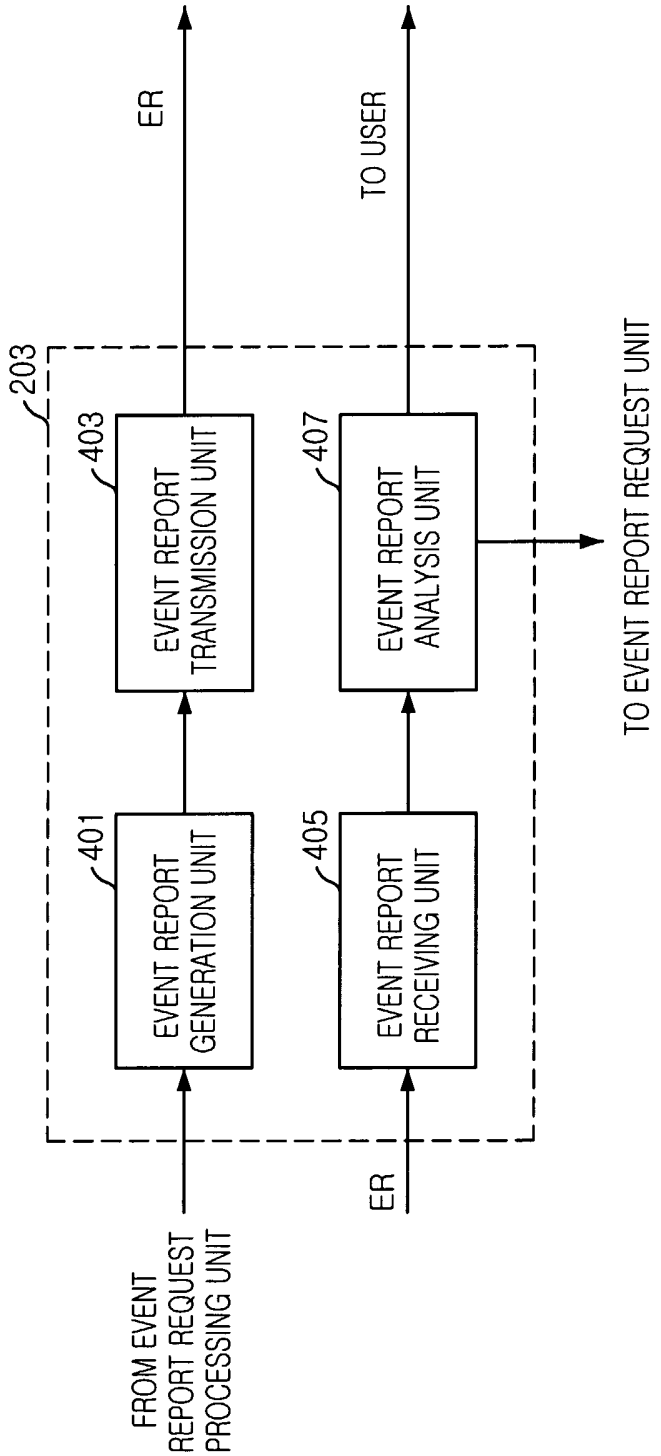

ER
TO USER
203
403
EVENT REPORT TRANSMISSION UNIT
407
EVENT REPORT ANALYSIS UNIT
TO EVENT REPORT REQUEST UNIT
401
EVENT REPORT GENERATION UNIT
405
EVENT REPORT RECEIVING UNIT
ER
FROM EVENT REPORT REQUEST PROCESSING UNIT

FIG. 10

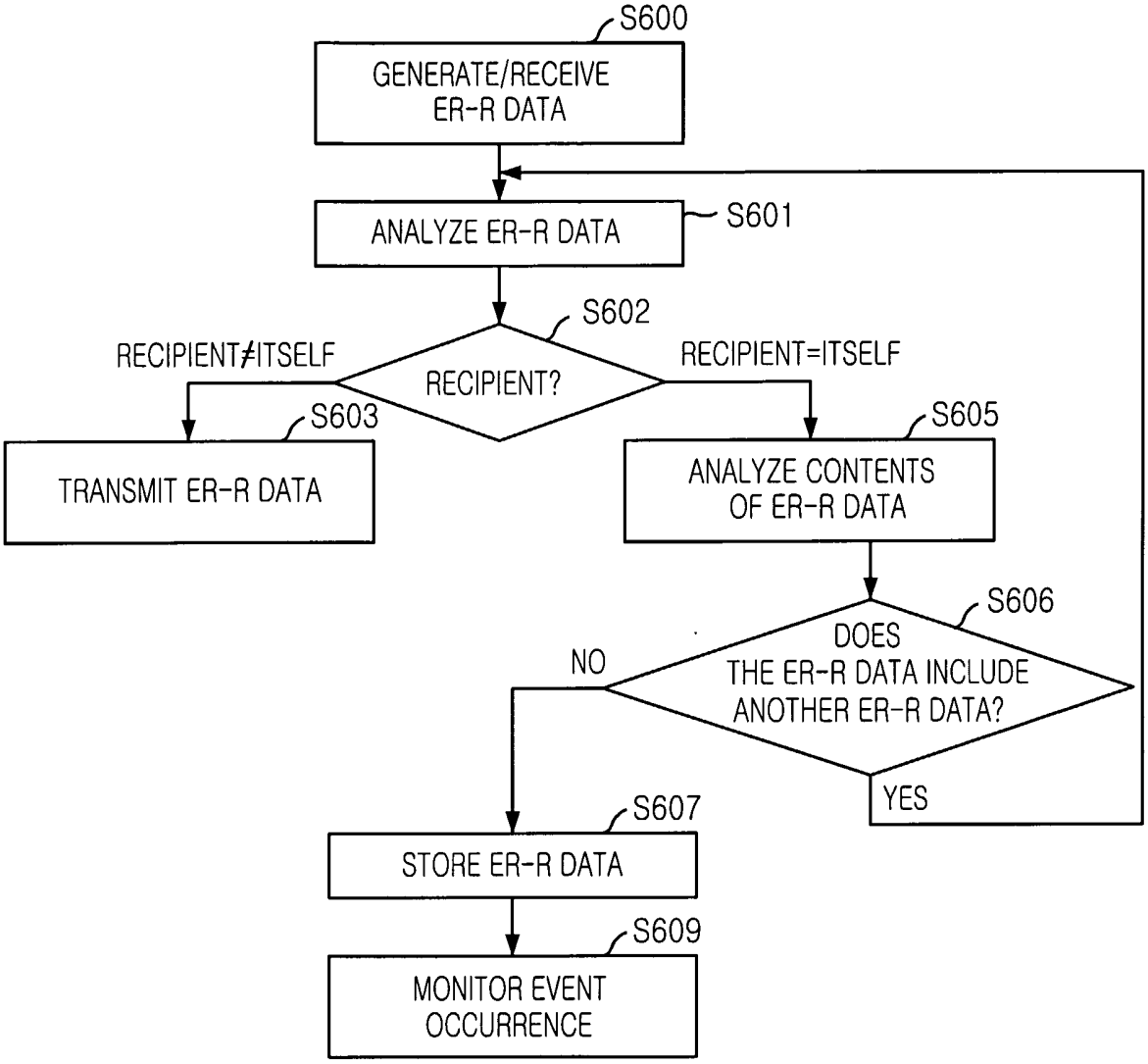

S600
GENERATE/RECEIVE ER-R DATA
ANALYZE ER-R DATA
S601
S602
RECIPIENT?
RECIPIENT≠ITSELF
RECIPIENT=ITSELF
S603
TRANSMIT ER-R DATA
S605
ANALYZE CONTENTS OF ER-R DATA
S606
DOES THE ER-R DATA INCLUDE ANOTHER ER-R DATA?
NO
YES
S607
STORE ER-R DATA
S609
MONITOR EVENT OCCURRENCE

FIG. 11

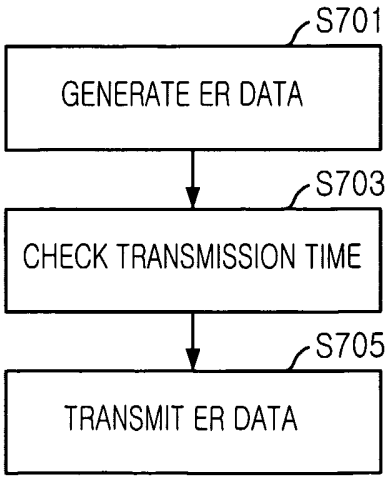

S701
GENERATE ER DATA
S703
CHECK TRANSMISSION TIME
S705
TRANSMIT ER DATA

FIG. 12

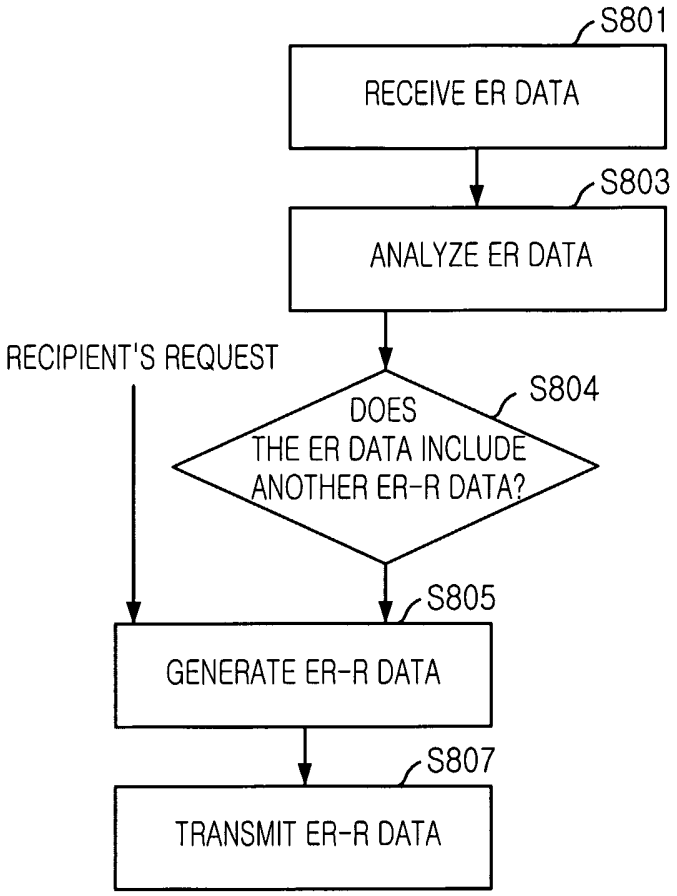
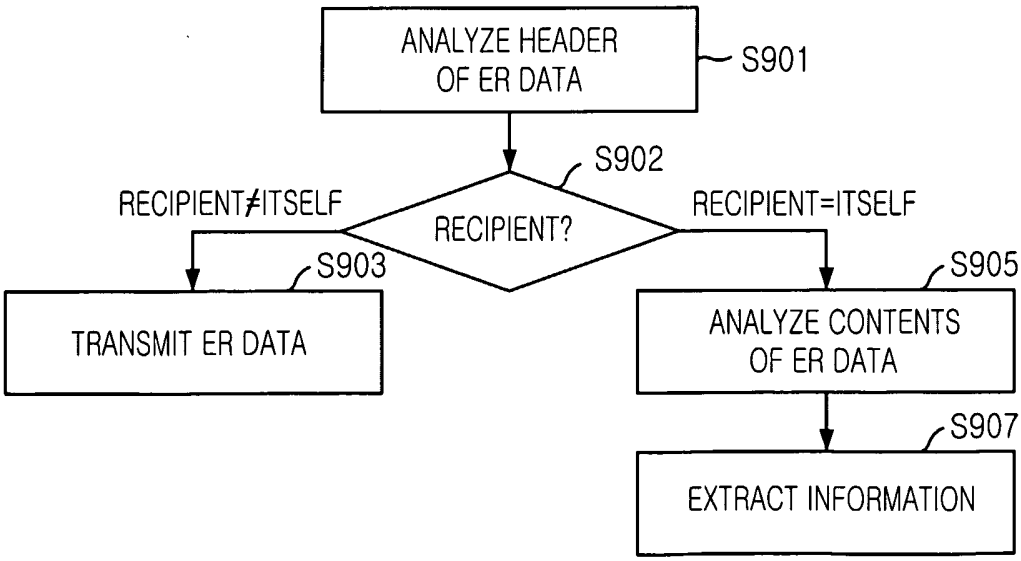

S801
RECEIVE ER DATA
S803
ANALYZE ER DATA
RECIPIENT'S REQUEST
S804
DOES
THE ER DATA INCLUDE
ANOTHER ER-R DATA?
S805
GENERATE ER-R DATA
S807
TRANSMIT ER-R DATA

FIG. 13


ANALYZE HEADER
OF ER DATA
S901
S902
RECIPIENT≠ITSELF
RECIPIENT?
RECIPIENT=ITSELF
S903
TRANSMIT ER DATA
S905
ANALYZE CONTENTS
OF ER DATA
S907
EXTRACT INFORMATION

PCT REQUEST

Original (for **SUBMISSION**)

VIII-5-1	**Declaration: Non-prejudicial disclosure or exceptions to lack of novelty** Declaration as to non-prejudicial disclosures or exceptions to lack of novelty (Rules 4.17(v) and 51bis.1(a)(v)): Name (LAST, First)	in relation to this international application SONG, Young-Joo declares that the subject matter claimed in this international application was disclosed as follows:
VIII-5-1(i)	Kind of disclosure:	publication
VIII-5-1(ii)	Date of disclosure:	14 October 2003 (14.10.2003)
VIII-5-1(iii)	Title of disclosure:	MPEG-21 Event Reporting Message Structure Based on Digital Data Broadcasting Use Case Scenarios
VIII-5-1(iv)	Place of disclosure:	
VIII-5-1(i)	Kind of disclosure:	publication
VIII-5-1(ii)	Date of disclosure:	15 March 2004 (15.03.2004)
VIII-5-1(iii)	Title of disclosure:	PROPOSED DEFINITION ON DELIVERY TIME AND RECIPIENT OF MPEG-21 EVENT REPORTING
VIII-5-1(iv)	Place of disclosure:	INTERNATIONAL ORGANISATION FOR STANDARD-ISATION ORGANISATION INTERNATIONALE DE NORMALISATION ISO/IEC JTC1/SC29/WG11 CODING OF MOVING PICTURES AND AUDIO
VIII-5-1(v)	This declaration is made for the purposes of:	all designations

PCT REQUEST

Original (for **SUBMISSION**)

VIII-5-2	**Declaration: Non-prejudicial disclosure or exceptions to lack of novelty** Declaration as to non-prejudicial disclosures or exceptions to lack of novelty (Rules 4.17(v) and 51bis.1(a)(v)): Name (LAST, First)	in relation to this international application HONG, Jin-Woo declares that the subject matter claimed in this international application was disclosed as follows:
VIII-5-2(i)	Kind of disclosure:	publication
VIII-5-2(ii)	Date of disclosure:	14 October 2003 (14.10.2003)
VIII-5-2(iii)	Title of disclosure:	MPEG-21 Event Reporting Message Structure based on Digital Data Broadcasting Use Case Scenarios
VIII-5-2(iv)	Place of disclosure:	
VIII-5-2(i)	Kind of disclosure:	publication
VIII-5-2(ii)	Date of disclosure:	15 March 2004 (15.03.2004)
VIII-5-2(iii)	Title of disclosure:	PROPOSED DEFINITION ON DELIVERY TIME AND RECIPIENT OF MPEG-21 EVENT REPORTING
VIII-5-2(iv)	Place of disclosure:	INTERNATIONAL ORGANISATION FOR STANDAISATION ORGANISATION INTERNA-TIONALE DE NORMALISATION ISO/IEC JTCI/ SC29/WG11 CODING OF MOVING PICTURES AND AUDIO
VIII-5-2(v)	This declaration is made for the purposes of:	all designations

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Original (for **SUBMISSION**)

VIII-5-3	**Declaration: Non-prejudicial disclosure or exceptions to lack of novelty** Declaration as to non-prejudicial disclosures or exceptions to lack of novelty (Rules 4.17(v) and 51bis.1(a)(v)): Name (LAST, First)	in relation to this international application MUN, Nam-Mee declares that the subject matter claimed in this international application was disclosed as follows:
VIII-5-3(i)	Kind of disclosure:	publication
VIII-5-3(ii)	Date of disclosure:	14 October 2003 (14.10.2003)
VIII-5-3(iii)	Title of disclosure:	MPEG-21 Event Reporting Message Structure based on Digital Data Broadcasting Use Case Scenarios
VIII-5-3(iv)	Place of disclosure:	
VIII-5-3(i)	Kind of disclosure:	publication
VIII-5-3(ii)	Date of disclosure:	15 March 2004 (15.03.2004)
VIII-5-3(iii)	Title of disclosure:	PROPOSED DEFINITION ON DELIVERY TIME AND RECIPIENT OF MPEG-21 EVENT REPORTING
VIII-5-3(iv)	Place of disclosure:	INTERNATIONAL ORGANISATION FOR STANDAISATION ORGANISATION INTERNA-TIONALE DE NORMALISATION ISO/IEC JTCI/ SC29/WG11 CODING OF MOVING PICTURES AND AUDIO
VIII-5-3(v)	This declaration is made for the purposes of:	all designations

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VIII-5-4	**Declaration: Non-prejudicial disclosure or exceptions to lack of novelty** Declaration as to non-prejudicial disclosures or exceptions to lack of novelty (Rules 4.17(v) and 51bis.1(a)(v)): Name (LAST, First)	in relation to this international application JI, Kyung-Hee declares that the subject matter claimed in this international application was disclosed as follows:
VIII-5-4(i)	Kind of disclosure:	publication
VIII-5-4(ii)	Date of disclosure:	14 October 2003 (14.10.2003)
VIII-5-4(iii)	Title of disclosure:	MPEG-21 Event Reporting Message Structure based on Digital Data Broadcasting Use Case Scenarios
VIII-5-4(iv)	Place of disclosure:	
VIII-5-4(i)	Kind of disclosure:	publication
VIII-5-4(ii)	Date of disclosure:	15 March 2004 (15.03.2004)
VIII-5-4(iii)	Title of disclosure:	PROPOSED DEFINITION ON DELIVERY TIME AND RECIPIENT OF MPEG-21 EVENT REPORTING
VIII-5-4(iv)	Place of disclosure:	INTERNATIONAL ORGANISATION FOR STANDAISATION ORGANISATION INTERNA-TIONALE DE NORMALISATION ISO/IEC JTCI/ SC29/WG11 CODING OF MOVING PICTURES AND AUDIO
VIII-5-4(v)	This declaration is made for the purposes of:	all designations

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2004/000872

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 G06F 15/00

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)
IPC7 : G06F 15, G06F17

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
US, EP, KR, JP : IPC as above

Electronic data base consulted during the internationl search (name of data base and, where practicable, search terms used)
eKIPASS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/18798 A1 (LG Electronice Inc.) Jan.23, 2003 See the whole document.	32, 98, 105
A	US 2002/95429 A1 (LG Electronice Inc.) Jul. 18, 2002 See the whole document.	32, 98, 105
A	ISO/IEC JTC1/SC29/WG11 N6279("Requirement for Event Reporting"), Dec. 2003 See the whole document.	1, 32, 98, 105

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 AUGUST 2004 (24.08.2004)	24 AUGUST 2004 (24.08.2004)

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Republic of Korea
Facsimile No. 82-42-472-7140

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CHUN, DAE NYUNG
Telephone No. 82-42-481-5991

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