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(54) **COMMUNICATION TERMINAL, COMMUNICATION SYSTEM, COMMUNICATION METHOD, AND COMMUNICATION PROGRAM**

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(57) **ABSTRACT**

The present invention has been made in view of the aforementioned problem and aims to provide a technique for reducing consumption of transmission power of an MTC device. The present invention relates to a communication terminal including measurement means for measuring a measurement target, reception means for receiving a certain condition regarding transmission from an application server, and determination means for determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

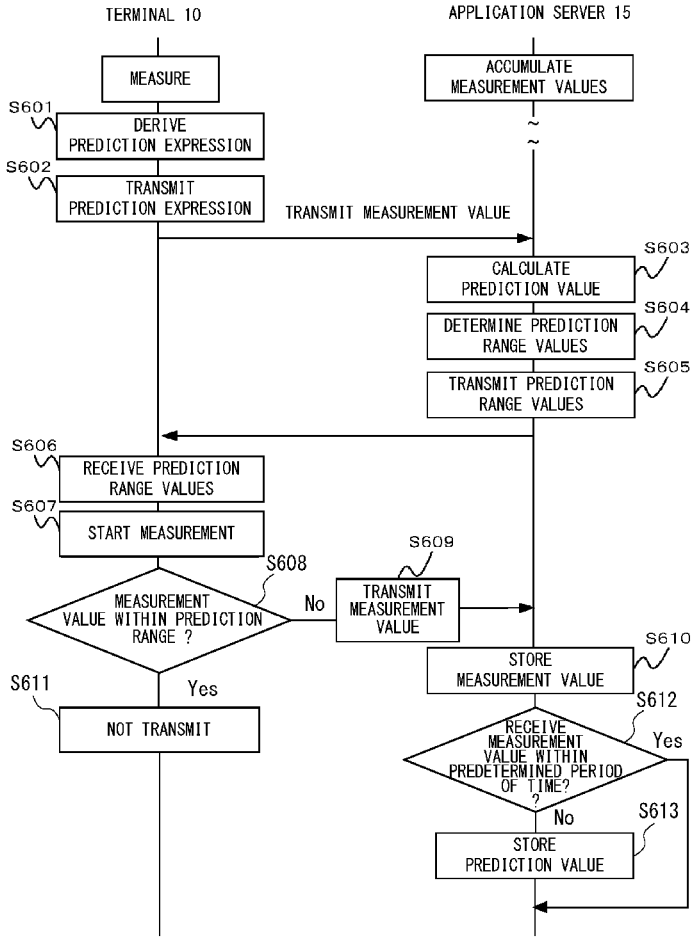


Fig. 1

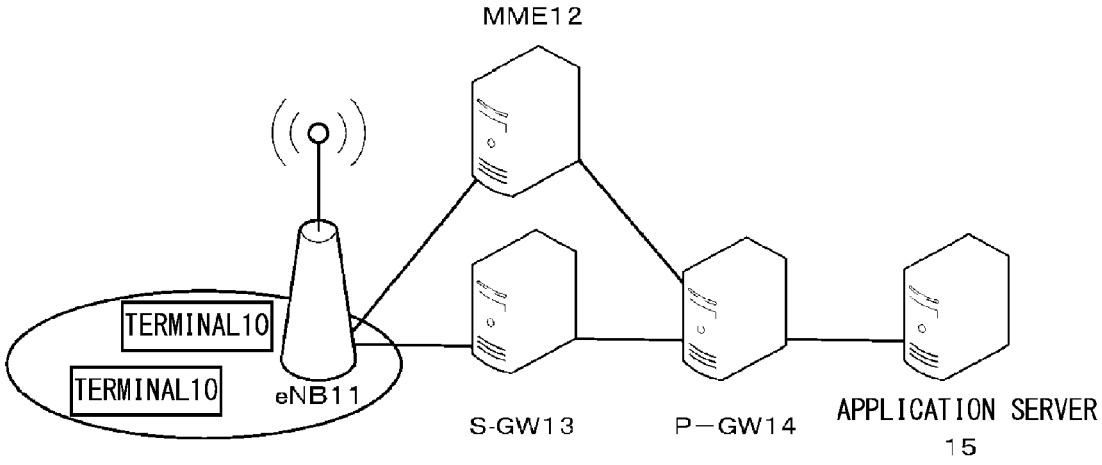
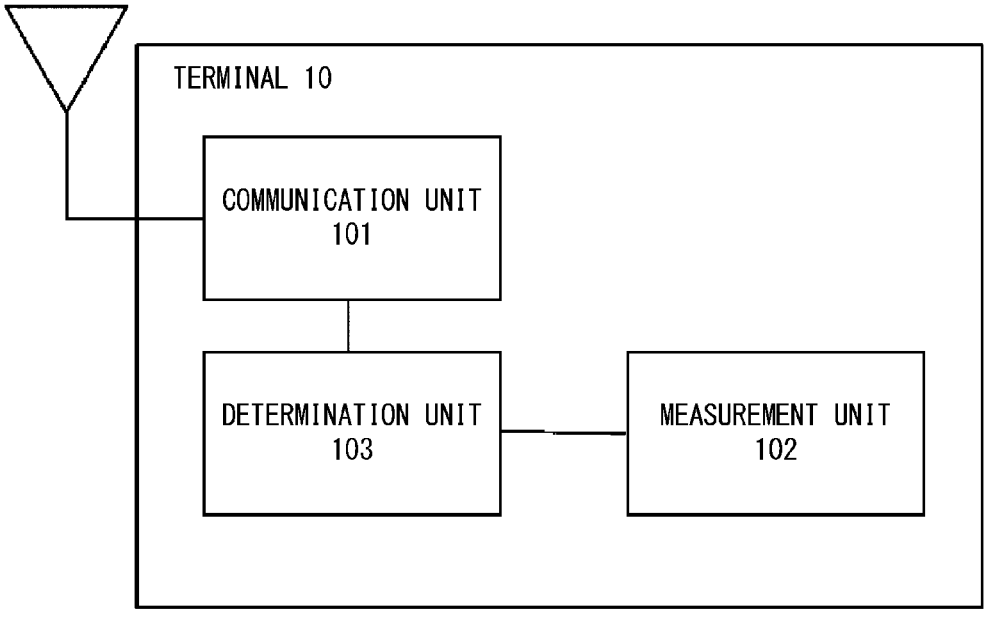

MME12
TERMINAL10
TERMINAL10
eNB11
S-GW13
P−GW14
APPLICATION SERVER
15

Fig. 2


TERMINAL 10
COMMUNICATION UNIT
101
DETERMINATION UNIT
103
MEASUREMENT UNIT
102

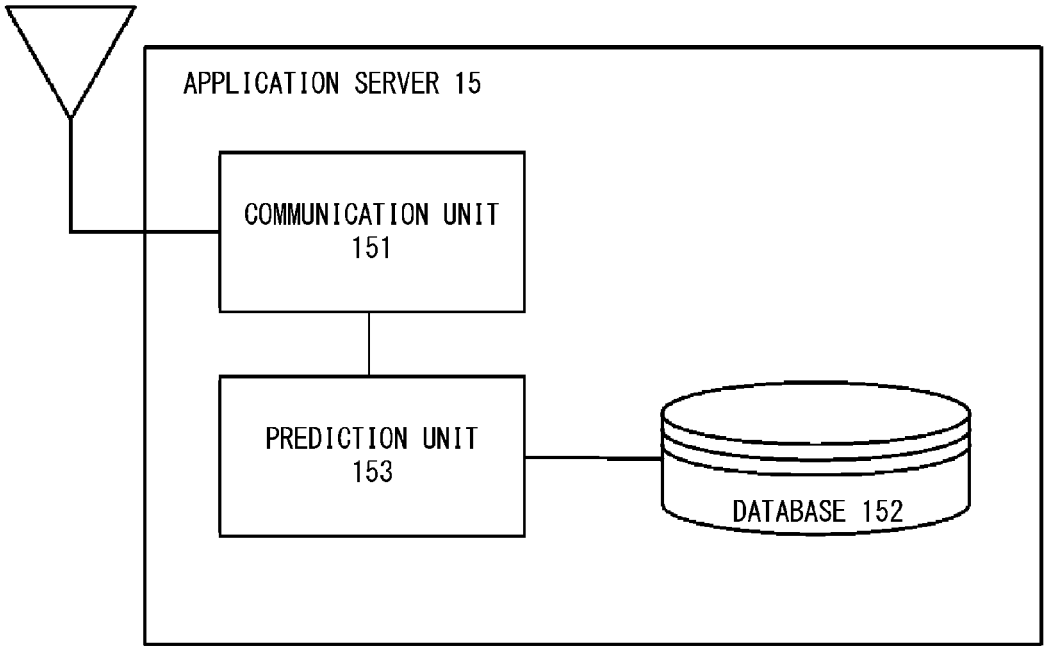

APPLICATION SERVER 15
COMMUNICATION UNIT
151
PREDICTION UNIT
153
DATABASE 152

Fig. 3

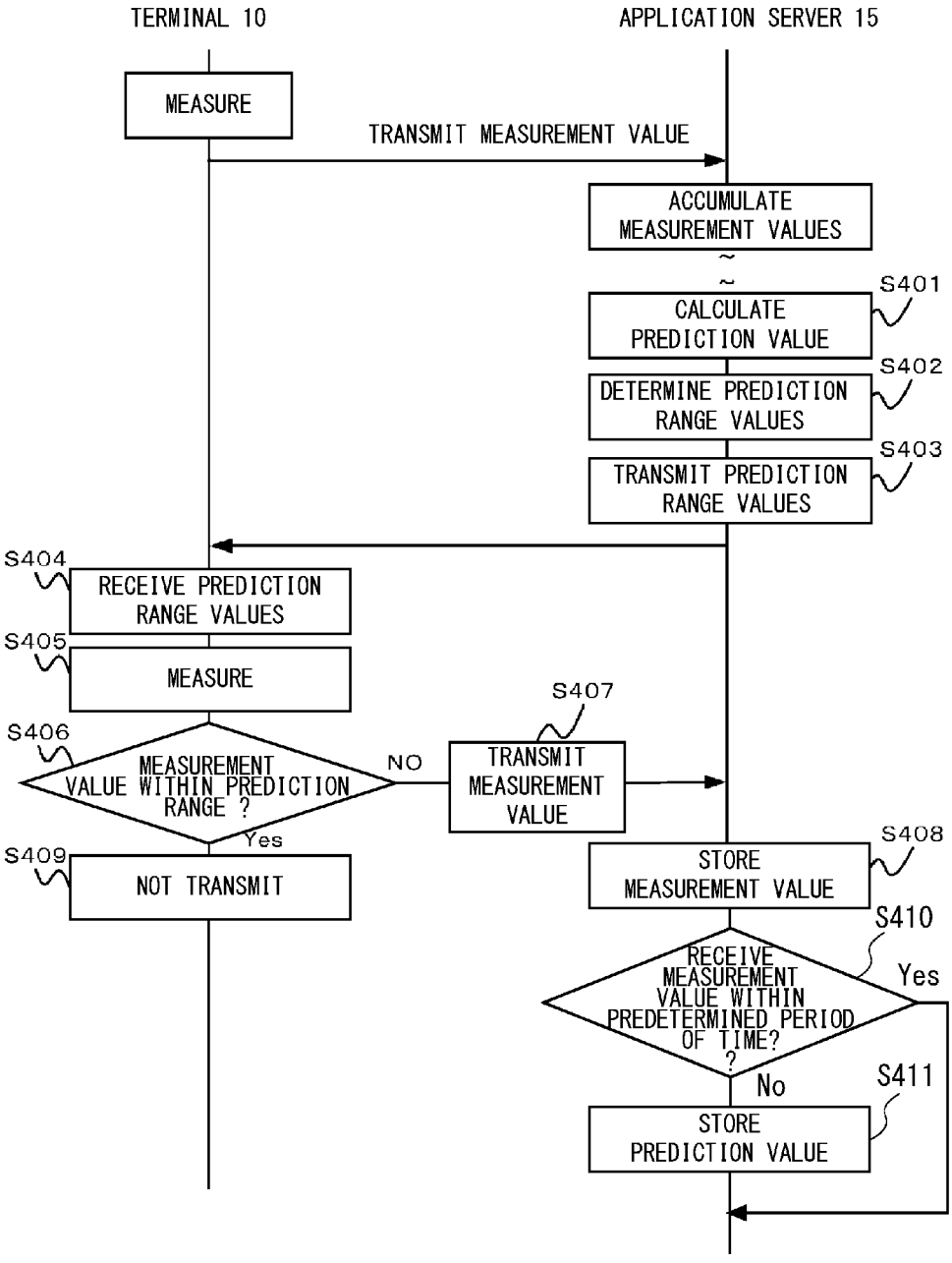

TERMINAL 10
APPLICATION SERVER 15
MEASURE
TRANSMIT MEASUREMENT VALUE
ACCUMULATE MEASUREMENT VALUES
S401
CALCULATE PREDICTION VALUE
S402
DETERMINE PREDICTION RANGE VALUES
S403
TRANSMIT PREDICTION RANGE VALUES
S404
RECEIVE PREDICTION RANGE VALUES
S405
MEASURE
S406
MEASUREMENT VALUE WITHIN PREDICTION RANGE ?
NO
Yes
S407
TRANSMIT MEASUREMENT VALUE
S408
STORE MEASUREMENT VALUE
S409
NOT TRANSMIT
S410
RECEIVE MEASUREMENT VALUE WITHIN PREDETERMINED PERIOD OF TIME?
Yes
No
S411
STORE PREDICTION VALUE

Fig. 4

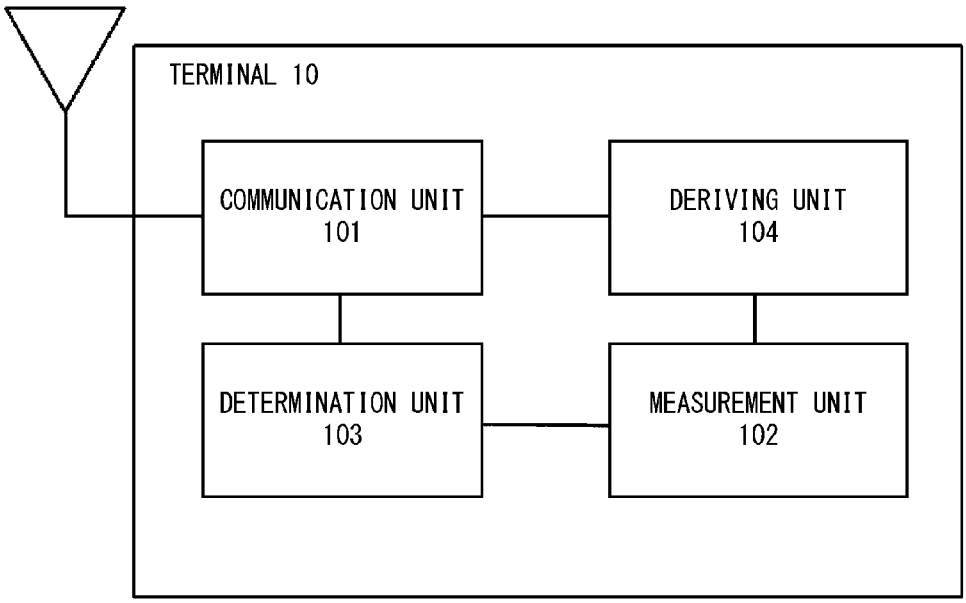

TERMINAL 10
COMMUNICATION UNIT
101
DERIVING UNIT
104
DETERMINATION UNIT
103
MEASUREMENT UNIT
102

Fig. 5

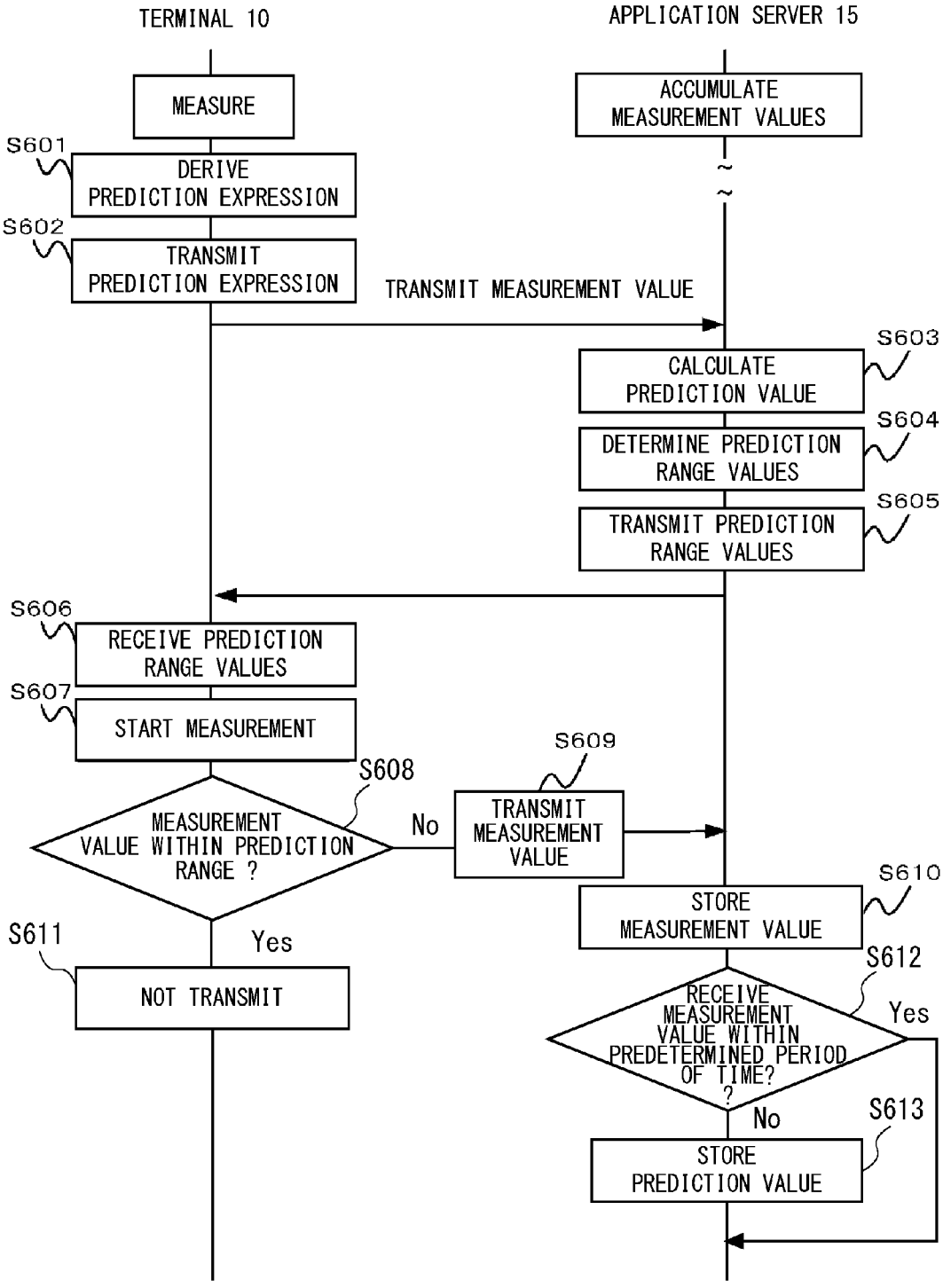

TERMINAL 10
APPLICATION SERVER 15
MEASURE
ACCUMULATE MEASUREMENT VALUES
S601
DERIVE PREDICTION EXPRESSION
S602
TRANSMIT PREDICTION EXPRESSION
TRANSMIT MEASUREMENT VALUE
S603
CALCULATE PREDICTION VALUE
S604
DETERMINE PREDICTION RANGE VALUES
S605
TRANSMIT PREDICTION RANGE VALUES
S606
RECEIVE PREDICTION RANGE VALUES
S607
START MEASUREMENT
S608
MEASUREMENT VALUE WITHIN PREDICTION RANGE ?
No
S609
TRANSMIT MEASUREMENT VALUE
S610
STORE MEASUREMENT VALUE
S611
Yes
NOT TRANSMIT
S612
RECEIVE MEASUREMENT VALUE WITHIN PREDETERMINED PERIOD OF TIME?
Yes
No
S613
STORE PREDICTION VALUE

Fig. 6

Fig. 7

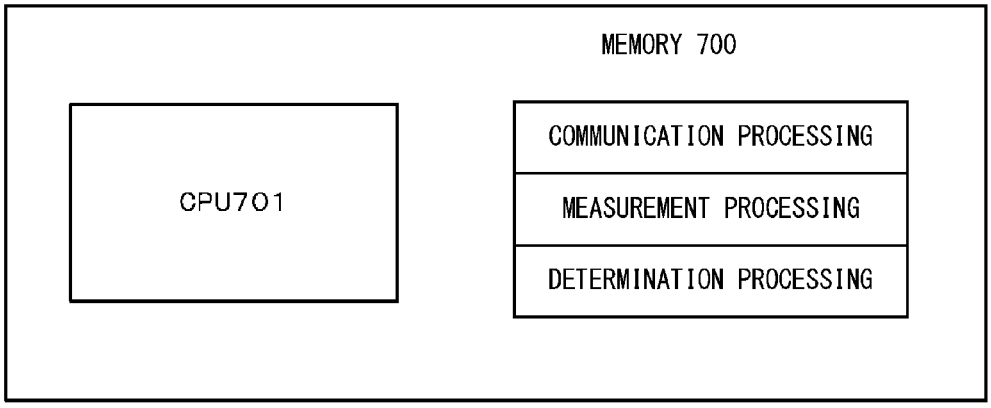


Fig. 8

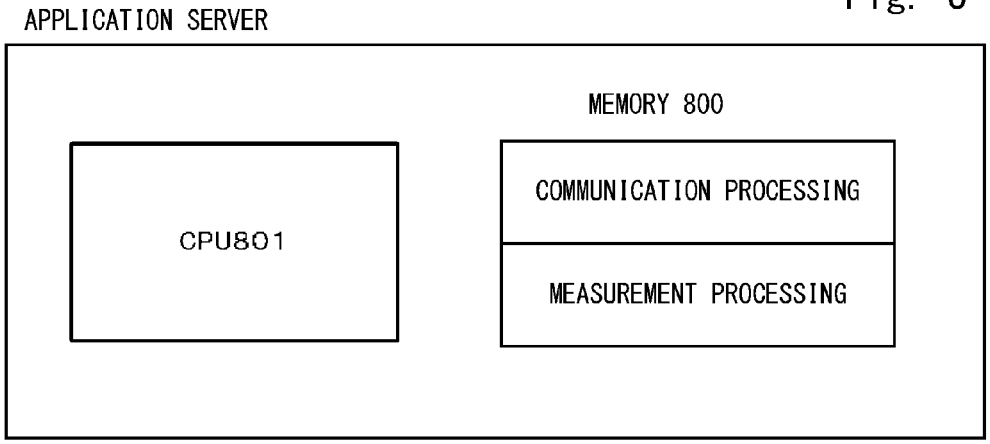
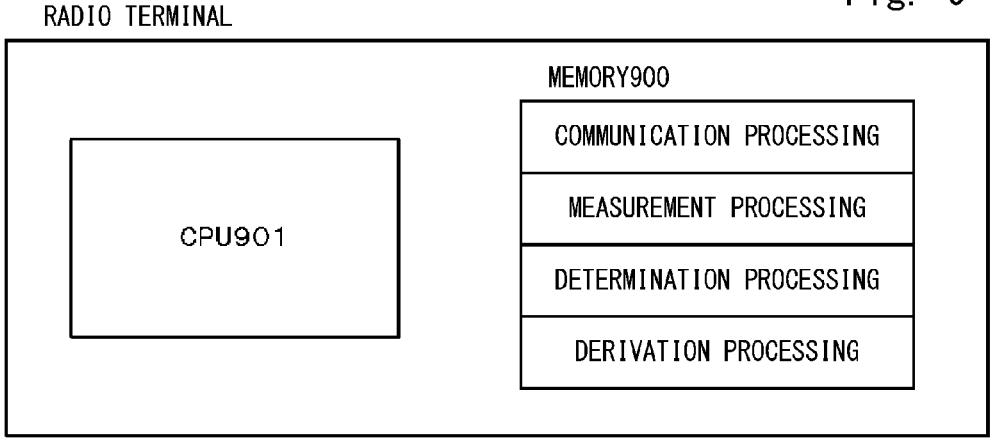


Fig. 9



COMMUNICATION TERMINAL, COMMUNICATION SYSTEM, COMMUNICATION METHOD, AND COMMUNICATION PROGRAM

TECHNICAL FIELD

[0001] The present disclosure relates to a communication terminal, a communication system, a communication method, and a communication program.

BACKGROUND ART

[0002] In 3GPP Long Term Evolution (LTE), which is one of next-generation cellular systems, Machine Type Communication (MTC) of Machine to Machine (M2M) communication is defined. In the MTC, an MTC device transmits and receives data. In 3GPP LTE, a discussion for reducing power consumption in the MTC device is currently being conducted.

[0003] In 3GPP LTE, in order to reduce power consumption in the MTC device, discontinuous reception (DRX) is defined in Non-Patent Literature 1. On the other hand, regarding discontinuous transmission (DTX), Non-Patent Literature 2 defines only discontinuous transmission of audio data.

CITATION LIST

Non-Patent Literature

[0004] [Non-Patent Literature 1] 3GPP TS36.321 (Internet <URL>HTTP://www.3gpp.org/dynareport/36-series.htm)

[0005] [Non-Patent Literature 2] 3GPP TS26.081 (Internet <URL>HTTP://www.3gpp.org/DynaReport/26-series.htm)

SUMMARY OF INVENTION

Technical Problem

[0006] When the MTC device transmits data, transmission power is larger than reception power and sleep power. Therefore, in the MTC device that is operated by batteries, consumption of transmission power at a time of transmission causes a problem.

[0007] The present invention has been made in view of the aforementioned problem and aims to provide a technique of reducing consumption of transmission power of the MTC device.

Solution to Problem

[0008] One aspect of the present invention is a communication terminal including: measurement means for measuring a measurement target; reception means for receiving a certain condition regarding transmission from an application server; and determination means for determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

[0009] One aspect of the present invention is a communication system including an application server and a terminal configured to communicate with the application server, in which the application server includes configuration means for configuring a certain condition regarding transmission, and the terminal includes: measurement means for measuring a measurement target; and determination means for determining, when the measurement value satisfies the configured condition, that the measurement value should not be transmitted to the application server.

[0010] One aspect of the present invention is a communication method including: measuring a measurement target; receiving a certain condition regarding transmission from an application server; and determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

[0011] One aspect of the present invention is a program of a communication terminal, the program causing the communication terminal to perform the following processing of: measuring a measurement target; receiving a certain condition regarding transmission from an application server; and determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

Advantageous Effects of Invention

[0012] According to the present invention, it is possible to reduce consumption of transmission power of the MTC device.

BRIEF DESCRIPTION OF DRAWINGS

[0013] FIG. **1** is a schematic view of a communication system;

[0014] FIG. **2** is a block diagram of a terminal according to a first embodiment;

[0015] FIG. **3** is a block diagram of an application server according to the first embodiment;

[0016] FIG. **4** is a timechart for describing an operation according to the first embodiment;

[0017] FIG. **5** is a block diagram of a terminal according to a second embodiment;

[0018] FIG. **6** is a timechart for describing an operation according to the second embodiment;

[0019] FIG. **7** is a diagram showing another aspect of a radio terminal **1** in a radio communication system according to the first embodiment;

[0020] FIG. **8** is a diagram showing another aspect of a base station and a radio network in the radio communication system according to this embodiment; and

[0021] FIG. **9** is a diagram showing another aspect of a radio terminal **1** in a radio communication system according to the second embodiment.

DESCRIPTION OF EMBODIMENTS

[0022] In the following description, with reference to the drawings, the features of the present disclosure will be described in detail. FIG. **1** is a schematic view of a communication system according to the present invention.

[0023] As shown in FIG. **1**, a communication system **1** includes a terminal **10**, an evolved NodeB (eNB) **11**, a Mobility Management Entitiy (MME) **12**, a Serving Gate Way (S-GW) **13**, a Packetdata Network Gate Way (P-GW) **14**, and an application server **15**.

[0024] The present invention is characterized in that prediction range values regarding a prediction range, the prediction range values transmitted from the application server **15** is compared with a measurement value of a measurement

target measured by the terminal **10** and the measurement value is not transmitted to the application server **15** when the measurement value is within the prediction range.

[0025] Further, the terminal includes deriving means for deriving, based on the measurement value that the measurement means has measured in the past, a prediction expression for calculating a prediction value and transmitting the derived prediction expression to the application server.

[0026] Further, the prediction value is calculated using the measurement value that the measurement means has measured in the past and the prediction expression derived by the deriving means.

[0027] Further, the prediction value is calculated using the prediction expression derived by the deriving means and the measurement value measured by the measurement means of a communication terminal located in a vicinity of the communication terminal that has transmitted the prediction expression.

[0028] Further, the prediction value is calculated using at least one of the past measurement value measured by the measurement means and the past prediction value.

[0029] Further, the communication terminal is an MTC device.

[0030] According to the aforementioned features, the present invention is able to reduce consumption of transmission power of the MTC device.

[0031] In the following description, embodiments of the present invention will be described.

First Embodiment

[0032] The terminal **10** is a terminal used for MTC and is also called an MTC device. The terminal **10** executes location registration in the MME **12** and the S-GW **13** via the eNB **11**, which is a radio base station, and communicates with the application server **15** via the P-GW **14**.

[0033] FIG. **2** is a block diagram of the terminal **10** according to the first embodiment. The terminal **10** includes, as shown in FIG. **2**, a communication unit **101**, a measurement unit **102**, and a determination unit **103**.

[0034] The communication unit **101** performs discontinuous transmission and reception of DRX and DTX with the application server **15**. The communication unit **101** receives, at the time of DRX from the application server **15**, the prediction range values regarding the prediction range, the prediction range values including the prediction value of the measurement value measured by the measurement unit **102** and tolerance range values regarding a tolerance range roughly around this prediction value. Further, the communication unit **101** performs or does not perform transmission by DTX depending on the result of the determination in the determination unit **102**.

[0035] The measurement unit **102** measures the measurement target and accumulates the results of the measurement. The measurement target indicates a physical amount, which is a physical phenomenon such as mass, distance, magnitude of a force, temperature, humidity, atmospheric pressure, pressure, speed, acceleration, volume, or luminance that can be measured by a measurement device. Further, a physical amount such as density that can be calculated from the measurement value is also accumulated as the measurement value. Note that the types of the physical amounts measured by the measurement unit **102** are determined in advance for each application. Further, the measurement in the measurement unit **102** may be performed at regular intervals or in accordance with an instruction from the application server **15**. When the measurement is performed in accordance with the instruction from the application server **15**, the measurement is preferably performed after a certain number of measurement values are accumulated in the application server **15**.

[0036] The determination unit **103** compares the prediction range values regarding the prediction range that the communication unit **101** has received from the application server **15** with the measurement value measured by the measurement unit **102**. When the result of the comparison indicates that the measurement value is within the prediction range, the determination unit **103** determines that it should not perform DTX. On the other hand, when the result of the comparison indicates that the measurement value is outside the prediction range, the determination unit **103** determines that it should perform DTX and transmit the measurement value to the application server **15**.

[0037] The application server **15** is a server that can communicate with a plurality of terminals **10**. The application server **15** includes, as shown in FIG. **3**, a communication unit **151**, a database **152**, and a prediction unit **153**.

[0038] The communication unit **151** receives the measurement value transmitted from the terminal **10**. Further, the communication unit **151** transmits the prediction range values regarding the prediction range determined based on the prediction value predicted by the prediction unit **153** to the terminal **10**.

[0039] The database **152** accumulates the measurement values transmitted from the terminal **10** in time series.

[0040] The prediction unit **153** calculates the prediction value based on the measurement values accumulated in the database **152** and determines the prediction range values obtained by adding the predetermined tolerance range values to this prediction value. While the prediction unit **153** performs a prediction using the past measurement values accumulated in the database **152**, a method of performing a prediction using the measurement value that has been measured most recently, a method of performing a prediction using a measurement value measured at the same time in a predetermined period, or a method of performing a prediction using measurement values of a plurality of given dates may be used. Further, the prediction unit **153** causes the database **152** to store the prediction value as the measurement value when the measurement value is not transmitted from the terminal **10** for a predetermined period of time after the transmission of the prediction range values.

[0041] Next, an operation according to this embodiment will be described. FIG. **4** is a timechart for describing the operation according to this embodiment. It is assumed that the application server **15** has already accumulated the measurement values obtained by measuring, by the measurement unit **102** of the terminal **10**, the physical amount determined for each application and the measurement unit **102** performs a measurement when the prediction range values is transmitted from the application server.

[0042] The prediction unit **153** calculates the prediction value based on the measurement values accumulated in the database **152** (S**401**) and determines the prediction range values obtained by adding the tolerance range values to the prediction value (S**402**).

[0043] The communication unit **151** transmits the prediction range values determined by the prediction unit **153** to the terminal **10** (S**403**).

[0044] The communication unit **101** of the terminal **10** receives the prediction range values transmitted from the application server **15** at the timing of DRX (S**404**).

[0045] The measurement unit **102** starts a measurement (S**405**) and the determination unit **103** compares the resulting measurement value with the received prediction range values (S**406**). When the measurement value is outside the prediction range, the determination unit **103** determines that it should transmit the measurement value, then it transmits the measurement value via the communication unit **101** at the timing of DTX (S**407**), and the communication unit **151** of the application server **15** receives this measurement value to store this value in the database **152** (S**408**).

[0046] On the other hand, when the measurement value is within the prediction range, the determination unit **103** determines that it should not transmit the measurement value (S**409**).

[0047] The prediction unit **153** monitors, after it has transmitted the prediction range values, whether the measurement value has been transmitted from the terminal **10** within the predetermined period of time (S**410**). When the measurement value has not been transmitted within this period of time, the prediction unit **153** causes the database **152** to store the prediction value as the measurement value (S**411**).

[0048] According to this embodiment, the measurement value is transmitted when it is outside the range of prediction values, whereby it is possible to achieve consumption of transmission power of the terminal **10**.

[0049] Some other methods may be employed as the prediction method performed by the prediction unit **153** described above.

[0050] For example, a method of performing a prediction using a measurement value of the same application previously transmitted from a neighboring terminal **10** which is in the vicinity of the terminal **10** to which the prediction range values is transmitted may be used. In this case, similar to the above description, a method of accumulating the measurement values in time series and performing a prediction using the measurement value that has been measured most recently, a method of performing a prediction using data measured at the same time in a predetermined period, and a method of performing a prediction using a measurement value on a given date may be used. Both the measurement value that has been previously transmitted from the neighboring terminal **10** and the measurement value that has been previously transmitted from the terminal **10** to which the prediction range values is transmitted may be used.

[0051] Next, when a plurality of applications are being executed in the terminal **10** to which the application server **15** transmits the prediction range values, a method of predicting the prediction value of the measurement value of the target using the measurement data in another application may be used. One example of this case includes, for example, a case in which the current temperature is predicted from the sales amount of cold drinks in a vending machine.

[0052] Next, a method of performing a prediction using a measurement value of an external database that can be accessed by the application server **15** may be used. One example of this case includes a case in which the temperature of a farm located in a specific region where the terminal is installed is predicted using the temperature of this specific region announced by the Meteorological Agency.

[0053] The prediction method in the present invention may be any one of the aforementioned methods or may be a combination thereof.

Second Embodiment

[0054] A second embodiment according to the present invention will be described. In the aforementioned embodiment, the example in which the application server **15** determines the prediction range values using the past measurement value has been described. In this embodiment, an example in which the terminal **10** derives a prediction expression using a past measurement value and the application server **15** determines the prediction range values using the prediction expression and the measurement value will be described. Elements of this embodiment which are the same as those of the aforementioned embodiment are denoted by the same reference numbers as those of the aforementioned embodiment and the descriptions thereof will be omitted.

[0055] The terminal **10** includes, besides the components of the first embodiment, a deriving unit **104**, as shown in FIG. **5**.

[0056] The deriving unit **104** performs regression analysis using the measurement values measured and accumulated by the measurement unit **102** to derive the prediction expression. Then the deriving unit **104** transmits the derived prediction expression to the application server **15** via the communication unit **101** at the timing of DTX. The prediction expression may be derived when, for example, a predetermined number of measurement values have been collected, it may be derived at regular intervals, or it may be derived when the instruction from the application server **15** is received. Further, the prediction expression may be transmitted every time the prediction expression is derived, at regular intervals, or in accordance with an instruction from the application server **15**.

[0057] The prediction unit **153** of the application server **15** calculates the prediction value using the prediction expression transmitted from the terminal **10** and the measurement values accumulated in the database **152** to determine the prediction range values.

[0058] Next, an operation of this embodiment will be described. FIG. **6** is a timechart for describing the operation according to this embodiment. It is assumed that the application server **15** has already accumulated the measurement values obtained by measuring, by the measurement unit **102** of the terminal **10**, the physical amount determined for each application.

[0059] The deriving unit **104** derives the prediction expression using the measurement value that has been measured in the past (S**601**). Then the deriving unit **104** transmits the derived prediction expression to the application server **15** via the communication unit **101** at the timing of DTX (S**602**).

[0060] The prediction unit **153** receives the prediction expression that has been transmitted, calculates the prediction value based on the received prediction expression and the measurement values accumulated in the database **152** (S**603**), and determines the prediction range values obtained by adding the tolerance range values to the prediction value (S**604**).

[0061] The communication unit **151** transmits the prediction range values determined by the prediction unit **153** to the terminal **10** (S**605**).

[0062] The communication unit **101** of the terminal **10** receives the prediction range values transmitted from the application server **15** at the timing of DRX (S**606**).

[0063] Upon receiving the prediction range values, the measurement unit **102** starts a measurement (S**607**) and the determination unit **103** compares the resulting measurement value with the received prediction range values (S**608**). When the measurement value is outside the prediction range, the determination unit **103** determines that it should transmit the measurement value, then it transmits the measurement value via the communication unit **101** at the timing of DTX (S**609**), the communication unit **151** of the application server **15** receives the measurement value to store this value in the database **152** (S**610**).

[0064] On the other hand, when the measurement value is within the prediction range, the determination unit **103** determines that it should not transmit the measurement value (S**611**).

[0065] The prediction unit **153** monitors, after it has transmitted the prediction range values, whether the measurement value has been transmitted from the terminal **10** within the predetermined period of time (S**612**). When the measurement value has not been transmitted, the prediction unit **153** causes the database **152** to store the prediction value as the measurement value (S**613**).

[0066] According to this embodiment, the measurement value is transmitted when it is outside the prediction range, whereby it is possible to reduce consumption of transmission power of the terminal **10**.

[0067] Some other methods may be employed as the prediction method performed by the prediction unit **153** described above.

[0068] For example, a method of performing a prediction using a prediction expression and a measurement value of the same application transmitted from the neighboring terminal **10** which is in the vicinity of the terminal **10** to which the prediction range values is transmitted may be used. In this case, similar to the above description, a method of accumulating the measurement values in time series and performing a prediction using the measurement value that has been measured most recently, a method of performing a prediction using data measured at the same time in a predetermined period, and a method of performing a prediction using a measurement value on a given date may be used. The measurement expression transmitted from the neighboring terminal **10** and the measurement value that has been previously transmitted from the terminal **10** to which the prediction range values is transmitted may be used. Alternatively, the measurement expression transmitted from the terminal **10** to which the prediction range values is transmitted and the measurement value that has been previously transmitted from the neighboring terminal **10** may be used.

[0069] Further, the method of deriving the prediction expression in the deriving unit **104** described above may be a method other than the aforementioned methods. When, for example, a plurality of applications are being executed in the terminal **10**, a method of deriving the prediction expression by performing correlation analysis with measurement data in another application may be used.

[0070] The prediction method and the deriving method according to the present disclosure may be any one of the aforementioned ones or may be a combination thereof.

[0071] While the present invention described above can be formed of hardware as will be clear from the aforementioned description, it can be achieved by causing an information processing apparatus (CPU) to execute the processing using a computer program. In this case, functions and operations similar to those in the aforementioned embodiments can be achieved by a processor operated by the program stored in a program memory.

[0072] For example, the radio terminal **1** can be achieved by a computer system including a memory **700** and a CPU **701** as shown in FIG. **7**. In this case, the memory **700** stores a program for performing processing corresponding to the communication unit **101**, the measurement unit **102**, and the determination unit **103** according to the aforementioned first embodiment. The CPU **701** executes the program stored in the memory **700**, to thereby achieve the functions of the communication unit **101**, the measurement unit **102**, and the determination unit **103**.

[0073] Further, the application server **15** that includes the communication unit **151** and the prediction unit **153** can be similarly achieved by a computer system including a memory **800** and a CPU **801** as shown in FIG. **8**. In this case, the memory **800** stores a program for performing processing corresponding to the communication unit **151** and the prediction unit **153** stated above. The CPU **801** executes the program stored in the memory **800**, to thereby achieve the functions of the communication unit **151** and the prediction unit **153**. The database **152** may be stored in the memory **800**, may be stored in another memory in the same computer system, or may be stored in a memory in another computer system.

[0074] Further, the radio terminal **1** can be achieved by a computer system including a memory **900** and a CPU **901** as shown in FIG. **9**. In this case, the memory **900** stores a program for performing processing corresponding to the communication unit **101**, the measurement unit **102**, the determination unit **103**, and the deriving unit **104** according to the aforementioned second embodiment. Then the CPU **901** executes the program stored in the memory **900**, to thereby achieve the functions of the communication unit **101**, the measurement unit **102**, the determination unit **103**, and the deriving unit **104**.

[0075] Further, while some or all of the aforementioned embodiments may be described as shown in the following Supplementary Notes, they are not limited to them.

[Supplementary Note 1]

[0076] A communication terminal comprising:

[0077] measurement means for measuring a measurement target;

[0078] reception means for receiving a certain condition regarding transmission from an application server; and

[0079] determination means for determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

[Supplementary Note 2]

[0080] The communication terminal according to Supplementary Note 1, wherein the condition is that the measurement value measured by the measurement means is a value

within a prediction range obtained from a prediction value of the measurement value measured by the measurement means.

[Supplementary Note 3]

[0081] The communication terminal according to Supplementary Note 1 or 2, comprising deriving means for deriving, based on the measurement value that the measurement means has measured in the past, a prediction expression for calculating the prediction value and transmitting the derived prediction expression to the application server.

[Supplementary Note 4]

[0082] The communication terminal according to Supplementary Note 3, wherein the prediction value is calculated using the measurement value that the measurement means has measured in the past and the prediction expression.

[Supplementary Note 5]

[0083] The communication terminal according to Supplementary Note 3, wherein the prediction value is calculated using the prediction expression and the measurement value measured by the measurement means of a communication terminal located in a vicinity of the communication terminal that has transmitted the prediction expression.

[Supplementary Note 6]

[0084] The communication terminal according to any one of Supplementary Notes 2 to 5, wherein the prediction value is calculated using at least one of the past measurement value measured by the measurement means and the past prediction value.

[Supplementary Note 7]

[0085] The communication terminal according to any one of Supplementary Notes 1 to 6, wherein the communication terminal is an MTC device.

[Supplementary Note 8]

[0086] A communication system comprising an application server and a terminal configured to communicate with the application server, wherein

[0087] the application server comprises configuration means for configuring a certain condition regarding transmission, and

[0088] the terminal comprises:

[0089] measurement means for measuring a measurement target; and

[0090] determination means for determining, when the measurement value satisfies the configured condition, that the measurement value should not be transmitted to the application server.

[Supplementary Note 9]

[0091] The communication system according to Supplementary Note 8, wherein the condition is that the measurement value measured by the measurement means is a value within a prediction range obtained from a prediction value of the measurement value measured by the measurement means.

[Supplementary Note 10]

[0092] The communication system according to Supplementary Note 8 or 9, wherein the terminal comprises deriving means for deriving, based on the measurement value that the measurement means has measured in the past, a prediction expression for calculating the prediction value.

[Supplementary Note 11]

[0093] The communication system according to Supplementary Note 10, wherein the configuration means calculates the prediction value using the measurement value that the measurement means has measured in the past and the prediction expression derived by the deriving means.

[Supplementary Note 12]

[0094] The communication system according to Supplementary Note 10, wherein the configuration means calculates a prediction value using the derived prediction expression and the measurement value measured by the measurement means of a communication terminal located in a vicinity of the communication terminal that has derived the prediction expression.

[Supplementary Note 13]

[0095] The communication system according to any one of Supplementary Notes 9 to 12, wherein the configuration means calculates the prediction value using at least one of the past measurement value measured by the measurement means and the past prediction value.

[Supplementary Note 14]

[0096] The communication system according to any one of Supplementary Notes 8 to 13, wherein the communication terminal is an MTC device.

[Supplementary Note 15]

[0097] A communication method comprising:

[0098] measuring a measurement target;

[0099] receiving a certain condition regarding transmission from an application server; and

[0100] determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

[Supplementary Note 16]

[0101] A communication terminal, wherein

[0102] the communication terminal including a memory and a processor, and

[0103] the processor executes the following processing of:

[0104] measuring a measurement target;

[0105] receiving a certain condition regarding transmission from an application server; and

[0106] determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

[0107] While the present invention has been described above with reference to the embodiments and examples, the present invention is not necessarily limited to the aforementioned embodiments and examples and may be modified in various manners within the technical scope of the present invention.

REFERENCE SIGNS LIST

[0108] **1** COMMUNICATION SYSTEM
[0109] **10** TERMINAL
[0110] **11** eNB
[0111] **12** MME
[0112] **13** S-GW
[0113] **14** P-GW
[0114] **15** APPLICATION SERVER
[0115] **101** COMMUNICATION UNIT
[0116] **102** MEASUREMENT UNIT
[0117] **103** DETERMINATION UNIT
[0118] **104** DERIVING UNIT
[0119] **151** COMMUNICATION UNIT
[0120] **152** DATABASE
[0121] **153** PREDICTION UNIT
[0122] **700** MEMORY
[0123] **701** CPU
[0124] **800** MEMORY
[0125] **801** CPU
[0126] **900** MEMORY
[0127] **901** CPU

1. A communication terminal comprising:
hardware, including a processor and a memory;
a measurement unit that is implemented at least by the hardware and that measures a measurement target;
a receiver that is implemented at least by the hardware and that receives a certain condition regarding transmission from an application server; and
a determination unit that is implemented at least by the hardware and that determines, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

2. The communication terminal according to claim **1**, wherein the condition is that the measurement value measured by the measurement unit is a value within a prediction range obtained from a prediction value of the measurement value measured by the measurement unit.

3. The communication terminal according to claim **1**, comprising a deriving unit that is implemented at least by the hardware and that derives, based on the measurement value that the measurement unit has measured in the past, a prediction expression for calculating the prediction value and transmitting the derived prediction expression to the application server.

4. The communication terminal according to claim **3**, wherein the prediction value is calculated using the measurement value that the measurement unit has measured in the past and the prediction expression.

5. The communication terminal according to claim **3**, wherein the prediction value is calculated using the prediction expression and the measurement value measured by the measurement unit of a communication terminal located in a vicinity of the communication terminal that has transmitted the prediction expression.

6. The communication terminal according to claim **2**, wherein the prediction value is calculated using at least one of the past measurement value measured by the measurement unit and the past prediction value.

7. The communication terminal according to claim **1**, wherein the communication terminal is an MTC device.

8. A communication system comprising an application server and a terminal configured to communicate with the application server, wherein the application server comprises:
first hardware, including a processor and a memory; and
a configuration unit that is implemented at least by the first hardware and that configures a certain condition regarding transmission, and
the terminal comprises:
second hardware, including a processor and a memory;
a measurement unit that is implemented at least by the second hardware and that measures a measurement target; and
a determination unit that is implemented at least by the second hardware and that determines, when the measurement value satisfies the configured condition, that the measurement value should not be transmitted to the application server.

9. The communication system according to claim **8**, wherein the condition is that the measurement value measured by the measurement unit is a value within a prediction range obtained from a prediction value of the measurement value measured by the measurement unit.

10. The communication system according to claim **8**, wherein
the terminal comprises a deriving unit that is implemented at least by the second hardware and that derives, based on the measurement value that the measurement unit has measured in the past, a prediction expression for calculating the prediction value.

11. The communication system according to claim **10**, wherein the configuration unit calculates the prediction value using the measurement value that the measurement unit has measured in the past and the prediction expression derived by the deriving unit.

12. The communication system according to claim **10**, wherein the configuration unit calculates a prediction value using the derived prediction expression and the measurement value measured by the measurement unit of a communication terminal located in a vicinity of the communication terminal that has derived the prediction expression.

13. The communication system according to claim **9**, wherein the configuration unit calculates the prediction value using at least one of the past measurement value measured by the measurement unit and the past prediction value.

14. The communication system according to claim **8**, wherein the communication terminal is an MTC device.

15. (canceled)

16. A non-transitory computer readable medium storing a program of a communication terminal, the program causing the communication terminal to perform the following processing of:
measuring a measurement target;
receiving a certain condition regarding transmission from an application server; and
determining, when the resulting measurement value satisfies the condition, that the measurement value should not be transmitted to the application server.

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