control center, and is not allowed to be executed autonomously and dispersively at the respective intersections in the various regions.

[0006]

In view of the conventional problems, embodiments of the present disclosure is to provide a roadside control apparatus and the like capable of dispersively executing advanced information processing such as analysis of signal information at each intersection.

[0007]

(1) A roadside control apparatus according to one aspect is a roadside control apparatus capable of wirelessly communicating with a mobile communication apparatus, and includes: a receiving unit configured to receive, from the mobile communication apparatus, positional information of a mobile body equipped with the mobile communication apparatus; a control unit configured to analyze, on the basis of the received positional information, present states of at least one of signal control and road traffic at an intersection, and generate output information based on a result of the analysis; and a transmission unit configured to transmit the generated output information to external equipment being at least one of a traffic signal controller, a remote control apparatus and the mobile communication apparatus.

[0008]

(14) A computer program according to one aspect is a computer program for causing a computer to function as a roadside control apparatus capable of wirelessly communicating with a mobile communication apparatus, and includes: a step of causing a receiving unit of the roadside control apparatus to receive, from the mobile communication apparatus, positional information of a mobile body equipped with the mobile communication apparatus; a step of causing a control unit of the roadside control apparatus to analyze, on the basis of the received positional information, present states of at least one of

signal control and road traffic at an intersection, and generate output information based on a result of the analysis; and a step of causing a transmission unit of the roadside control apparatus to transmit the generated output information to external equipment being at least one of a traffic signal controller, a remote control apparatus and the mobile communication apparatus.

[0009]

(15) A method according to one aspect is an information processing method executed by a roadside control apparatus capable of wirelessly communicating with a mobile communication apparatus, and includes: a step of causing a receiving unit of the roadside control apparatus to receive, from the mobile communication apparatus, positional information of a mobile body equipped with the mobile communication apparatus; a step of causing a control unit of the roadside control apparatus to analyze, on the basis of the received positional information, present states of at least one of signal control and road traffic at an intersection, and generate output information based on a result of the analysis; and a step of causing a transmission unit of the roadside control apparatus to transmit the generated output information to external equipment being at least one of a traffic signal controller, a remote control apparatus and the mobile communication apparatus.

ADVANTAGEOUS EFFECTS OF INVENTION

[0010]

According to the present invention, advanced information processing such as analysis of signal information can be dispersed to be executed at each of intersections.

BRIEF DESCRIPTION OF DRAWINGS

[0011]

[FIG. 1] FIG. 1 is a perspective view showing an overall configuration of a traffic control system.

[FIG. 2] FIG. 2 is a plan view of a road at an intersection where a roadside

CLAIMS

1. A roadside control apparatus capable of wirelessly communicating with a mobile communication apparatus, comprising:

a receiving unit configured to receive, from the mobile communication apparatus, positional information of a mobile body equipped with the mobile communication apparatus;

a control unit configured to analyze, on the basis of the received positional information, present states of at least one of signal control and road traffic at an intersection, and generate output information based on a result of the analysis; and

a transmission unit configured to transmit the generated output information to external equipment being at least one of a traffic signal controller, a remote control apparatus and the mobile communication apparatus.

2. The roadside control apparatus according to claim 1, wherein

the control unit determines whether or not to extend a green interval at an inflow road of the intersection, on the basis of a driving distance by which a mobile body equipped with the mobile communication apparatus, traveling on the inflow road, drives during the green interval at the inflow road.

3. The roadside control apparatus according to claim 2, wherein the control unit does not extend the green interval at the inflow road when the driving distance is less than a predetermined distance.

4. The roadside control apparatus according to claim 2 or 3, wherein the control unit further determines whether or not to extend the green interval at the inflow road, on the basis of a number of times of traffic light waiting, at the inflow road, of the mobile body equipped with the mobile communication apparatus.

5. The roadside control apparatus according to claim 4, wherein the control unit extends the green interval at the inflow road, in a case where the driving distance is greater than or equal to the predetermined distance and the number of times of traffic light waiting is greater than or equal to a predetermined number of times.

6. The roadside control apparatus according to any one of claims 1 to 5, wherein

the control unit estimates a number of in-zone equipped mobile bodies which is a number of mobile bodies equipped with the mobile communication apparatus, that are existing in a measurement zone in the inflow road of the intersection, and estimates a total number of in-zone mobile bodies which is a number of all mobile bodies existing in the measurement zone, and

the control unit divides the number of in-zone equipped mobile bodies by the total number of in-zone mobile bodies to calculate an equipping rate of the mobile communication apparatus.

7. The roadside control apparatus according to claim 6, wherein

the control unit sets, as an upstream end of the measurement zone, a stop position of one mobile body among one or a plurality of mobile bodies equipped with the mobile communication apparatus, the mobile bodies waiting for a traffic light to change at the intersection.

8. The roadside control apparatus according to claim 6, wherein

the control unit sets, as an upstream end of the measurement zone, a predetermined position on a downstream side of a stop position of one mobile body among one or a plurality of mobile bodies equipped with the mobile communication apparatus, the mobile bodies waiting for a traffic light to change at the intersection.

9. The roadside control apparatus according to any one of claims 1 to 8, wherein

the control unit transmits a convoy delimiting command for separating a mobile body platoon that is composed of a plurality of mobile bodies equipped with the mobile communication apparatus and is traveling in a convoy, into a platoon of preceding vehicles that can pass through the intersection at a green light this time and a platoon of following vehicles that cannot pass through the intersection at the green light this time, to the mobile communication apparatus of the mobile body platoon.

10. The roadside control apparatus according to claim 9, wherein

the control unit determines whether or not to transmit the convoy delimiting command, on the basis of a traffic light switching timing at the inflow road of the intersection, and positions of a lead mobile body and a rearmost mobile body in the mobile body platoon.

11. The roadside control apparatus according to claim 10, wherein

the control unit transmits the convoy delimiting command in a case where the rearmost mobile body in the mobile body platoon cannot pass through the intersection by a green-light end time at the inflow road.

12. The roadside control apparatus according to any one of claims 9 to 11, wherein

the control unit transmits the convoy delimiting command in a case where only a part of mobile bodies in the mobile body platoon can pass through the intersection because of an exit-blocking jam that has occurred on an exit road of the intersection.

13. The roadside control apparatus according to claim 12, wherein

the control unit generates information capable of specifying a delimitation position between the preceding vehicles and the following vehicles, in accordance with a length of an empty space that exists on an upstream side of the exit-blocking jam on the exit road, and causes the convoy delimiting command to include the generated information.

14. A computer program for causing a computer to function as a roadside control apparatus capable of wirelessly communicating with a mobile communication apparatus, the computer program including:

a step of causing a receiving unit of the roadside control apparatus to receive, from the mobile communication apparatus, positional information of a mobile body equipped with the mobile communication apparatus;

a step of causing a control unit of the roadside control apparatus to analyze, on the basis of the received positional information, present states of at least one of signal control and road traffic at an intersection, and generate output information based on a result of the analysis; and

a step of causing a transmission unit of the roadside control apparatus to transmit the generated output information to external equipment being at least one of a traffic signal controller, a remote control apparatus and the mobile communication apparatus.

15. An information processing method executed by a roadside control apparatus capable of wirelessly communicating with a mobile communication apparatus, the method including:

a step of causing a receiving unit of the roadside control apparatus to receive, from the mobile communication apparatus, positional information of a mobile body equipped with the

mobile communication apparatus;

a step of causing a control unit of the roadside control apparatus to analyze, on the basis of the received positional information, present states of at least one of signal control and road traffic at an intersection, and generate output information based on a result of the analysis; and

a step of causing a transmission unit of the roadside control apparatus to transmit the generated output information to external equipment being at least one of a traffic signal controller, a remote control apparatus and the mobile communication apparatus.