the spaces allocated to the respective items associated with said electronic shelf labels.

PRESENTATION OF THE INVENTION

The present invention aims at determining the distribution of electronic shelf labels of a sales area.

For this purpose, according to an aspect, the present disclosure refers to a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of radiofrequency beacons configured to simultaneously transmit radio signals which are carriers of information on their transmission times, the expected arrangement of the electronic shelf labels in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area, said method comprising the steps according to which,

- at an acquisition time:

a portable terminal provided with a radiofrequency location module receives the radio signals simultaneously transmitted by the radiofrequency beacons and determines data derived from the radio signals by means of said radiofrequency location module; and

the portable terminal

acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the label identifier acquired at the acquisition time and the data derived from the radio signals received at the acquisition time,

- the central computer server determines association data between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the radiofrequency location module measures the reception times of the radio signals simultaneously transmitted by the radiofrequency beacons and wherein:

- the radiofrequency location module determines the location of the portable terminal from the radio signals transmitted by the radiofrequency beacons by measuring the propagation time of the respective signals of said radiofrequency beacons, the data derived from the radiofrequency signals being position data, or wherein:

- the data derived from the radiofrequency signals are the reception time of said signals measured by the radiofrequency location module, and the location of the portable terminal is determined by the central computer server from said reception time.

According to another aspect, the present disclosure refers to a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic

shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of luminaires configured to simultaneously transmit light signals which are carriers of information on their transmission times, the expected arrangement of the electronic shelf labels in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area, said method comprising the steps according to which,

– at an acquisition time:

a portable terminal equipped with a positioning module receives the light signals simultaneously transmitted by the luminaires and determines data derived from the light signals by means of said positioning module; and

the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

– the portable terminal transmits to a central computer server the label identifier acquired at the acquisition time and the data derived from the light signals received from the plurality of luminaires at the acquisition time,

– the central computer server determines the association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the positioning module measures the reception times of the light signals simultaneously transmitted by the luminaires and wherein:

- the positioning module determines the location of the portable terminal from the light signals transmitted by the luminaires by measuring the propagation time of the respective light signals of said luminaires, the data derived from the light signals being position data, or wherein:
- the data derived from the light signals are the reception time of said signals measured by the positioning module, and the location of the portable terminal is determined by the central computer server from said reception time.

According to another aspect, the present disclosure refers to a system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,
- a plurality of radiofrequency beacons configured to simultaneously transmit radio signals which are carriers of information on their transmission times,
- a portable terminal provided with a radiofrequency location module configured to receive, at an acquisition time, the radio signals simultaneously transmitted by the radiofrequency

beacons and determine data derived from the radio signals by means of said radiofrequency location module, the portable terminal being further adapted to acquire, at the acquisition time, an identifier of an electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier acquired at the acquisition time and the data derived from the radio signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the radiofrequency location module is configured to measure the reception times of the radio signals simultaneously transmitted by the radiofrequency beacons and wherein:

- the radiofrequency location module is configured to determine the location of the portable terminal from the radio signals transmitted by the radiofrequency beacons by measuring the propagation time of the respective signals of said radiofrequency beacons, the data derived from the radiofrequency signals being position data, or wherein:
- the data derived from the radiofrequency signals are the reception times of said signals measured by the radiofrequency location module, and the central computer server is configured to determine the location of the portable terminal from said reception times.

According to another aspect, the present disclosure refers to a system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,
- a plurality of luminaires configured to simultaneously transmit light signals which are carriers of information on their transmission times,
- a portable terminal equipped with a positioning module configured to receive, at an acquisition time, the light signals simultaneously transmitted by the luminaires and determine data derived from the light signals by means of said positioning module, the portable terminal being furthermore adapted to acquire, at the acquisition time, an identifier of an electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier acquired at the acquisition time and the data derived from the light signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position

thus determined being specific to said electronic shelf label,

wherein the positioning module measures the reception times of the light signals simultaneously transmitted by the luminaires and wherein:

- the positioning module determines the location of the portable terminal from the light signals transmitted by the luminaires by measuring the propagation time of the respective light signals of said luminaires, the data derived from the light signals being position data, or wherein:
- the data derived from the light signals are the reception time of said signals measured by the positioning module, and the location of the portable terminal is determined by the central computer server from said reception time.

In an example, there is provided a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels distributed in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of radiofrequency beacons configured to transmit radio signals, said method comprising the steps according to which,

- a portable terminal provided with a radiofrequency location module receives radio signals transmitted by a plurality of radiofrequency beacons and determines data derived from the radio signals by means of said radiofrequency location module;
- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the label identifier and the data derived from the signals received at the acquisition time,

- the central computer server determines association data between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time.

CLAIMS

1. A method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of radiofrequency beacons configured to simultaneously transmit radio signals which are carriers of information on their transmission times,

the expected arrangement of the electronic shelf labels in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area,

said method comprising the steps according to which,

– at an acquisition time:

a portable terminal provided with a radiofrequency location module receives the radio signals simultaneously transmitted by the radiofrequency beacons and determines data derived from the radio signals by means of said radiofrequency location module; and

the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

– the portable terminal transmits to a central computer server the label identifier acquired at the acquisition time and the data derived from the radio signals received at the acquisition time,

– the central computer server determines association data between the electronic shelf label identified by the label identifier and one position of

said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the radiofrequency location module measures the reception times of the radio signals simultaneously transmitted by the radiofrequency beacons and wherein:

- the radiofrequency location module determines the location of the portable terminal from the radio signals transmitted by the radiofrequency beacons by measuring the propagation time of the respective signals of said radiofrequency beacons, the data derived from the radiofrequency signals being position data, or wherein:
- the data derived from the radiofrequency signals are the reception time of said signals measured by the radiofrequency location module, and the location of the portable terminal is determined by the central computer server from said reception time.

2. The method according to claim 1, wherein the portable terminal also acquires an identifier of an item associated with the electronic shelf label and transmits said item identifier to the central computer server as well as the label identifier and the data derived from the radio signals received at the acquisition time, and the central computer server determines association data between the electronic shelf label, the position of the electronic shelf label and the item associated with said electronic shelf label.

3. The method according to any of the preceding claims, wherein the determined position for the

electronic shelf label is determined, among predefined spots, as the nearest spot to the portable terminal.

4. The method according to claim 3, wherein the determined position for the electronic shelf label is defined as the combination of a reference of the gondola, a number of a shelf and a distance along a rail.

5. The method according to any of the preceding claims, wherein each electronic shelf label is provided with a radiofrequency peripheral device and the portable terminal acquires the identifier of the electronic shelf label by establishing a radiofrequency communication with said electronic shelf label.

6. The method according to claim 5, wherein the radiofrequency peripheral device comprises an antenna and an NFC-type (Near Field Communication) electronic chip.

7. The method according to any of claims 1 to 4, wherein each electronic shelf label is provided with an element for visually representing the label identifier, and the portable terminal comprises an optical reader adapted to read said visual representation element and acquire the label identifier.

8. The method according to any of the preceding claims, wherein the gondolas define aisles therebetween, and radiofrequency beacons are arranged in the extension of aisles of the sales area.

9. The method according to the preceding claim, wherein for each of a plurality of aisles, a

radiofrequency beacon is arranged on each side of the extension of the aisle.

10. The method according to the preceding claim, wherein the radiofrequency beacons emit pulses over a frequency band greater than 500 MHz according to the Ultra wideband technique.

11. A method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of luminaires configured to simultaneously transmit light signals which are carriers of information on their transmission times,

the expected arrangement of the electronic shelf labels in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area,

said method comprising the steps according to which,

- at an acquisition time:

a portable terminal equipped with a positioning module receives the light signals simultaneously transmitted by the luminaires and determines data derived from the light signals by means of said positioning module; and

the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the label identifier acquired at the

acquisition time and the data derived from the light signals received from the plurality of luminaires at the acquisition time,

– the central computer server determines the association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the positioning module measures the reception times of the light signals simultaneously transmitted by the luminaires and wherein:

– the positioning module determines the location of the portable terminal from the light signals transmitted by the luminaires by measuring the propagation time of the respective light signals of said luminaires, the data derived from the light signals being position data, or wherein:

– the data derived from the light signals are the reception time of said signals measured by the positioning module, and the location of the portable terminal is determined by the central computer server from said reception time.

12. A system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto,

said system comprising:

– a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,

– a plurality of radiofrequency beacons configured to simultaneously transmit radio signals which are carriers of information on their transmission times,

– a portable terminal provided with a radiofrequency location module configured to receive, at an acquisition time, the radio signals simultaneously transmitted by the radiofrequency beacons and determine data derived from the radio signals by means of said radiofrequency location module, the portable terminal being further adapted to acquire, at the acquisition time, an identifier of an electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier acquired at the acquisition time and the data derived from the radio signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the radiofrequency location module is configured to measure the reception times of the radio signals simultaneously transmitted by the radiofrequency beacons and wherein:

– the radiofrequency location module is configured to determine the location of the portable

terminal from the radio signals transmitted by the radiofrequency beacons by measuring the propagation time of the respective signals of said radiofrequency beacons, the data derived from the radiofrequency signals being position data, or wherein:

- the data derived from the radiofrequency signals are the reception times of said signals measured by the radiofrequency location module, and the central computer server is configured to determine the location of the portable terminal from said reception times.

13. The system according to claim 12, wherein the central computer server is configured to determine a position of the electronic shelf label corresponding to the combination of a gondola reference, a number of a shelf and a distance along a rail.

14. A system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto,

said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,

- a plurality of luminaires configured to simultaneously transmit light signals which are carriers of information on their transmission times,

- a portable terminal equipped with a positioning module configured to receive, at an acquisition time,

the light signals simultaneously transmitted by the luminaires and determine data derived from the light signals by means of said positioning module, the portable terminal being furthermore adapted to acquire, at the acquisition time, an identifier of an electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier acquired at the acquisition time and the data derived from the light signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label,

wherein the positioning module measures the reception times of the light signals simultaneously transmitted by the luminaires and wherein:

- the positioning module determines the location of the portable terminal from the light signals transmitted by the luminaires by measuring the propagation time of the respective light signals of said luminaires, the data derived from the light signals being position data, or wherein:
- the data derived from the light signals are the reception time of said signals measured by the positioning module, and the location of the portable terminal is determined by the central computer server from said reception time.

15. The system according to claim 14, wherein the luminaires comprise light emitting diodes, and the

light signals carry VLC (Visible Light Communications) codes.