

SYSTEM FOR DYNAMICALLY MANAGING THE SURROUNDINGS IN A STATION OR ANY OTHER PUBLIC SPACE

1. Technical field of the invention

5 The technical field of the invention is the management of the surroundings in a station, for example a railway station or underground station, or any other public space.

2. Technological background

 A railway station or underground station or a public space in general is a
10 living space where the environment and the atmosphere vary greatly depending on the time of day, the time of year, the number of passengers, the external and/or internal climatic conditions, etc. In the rest of this document, the example of underground and railway stations was envisaged when providing specific examples of the invention.

15 The inventors have demonstrated that the technical means equipping a railway or underground station for the well-being and/or security of users of the station, such as the public address system in the station, the lighting means, heating means, ventilation means, display means, etc. have fixed operations, which do not take account of changes in the environment and atmosphere of the
20 station.

 This mismatch between the station environment and the operation of the technical means may produce a feeling of insecurity and/or an unpleasant experience in some users and in some situations, which may deter those users in future from using the transport means of that station.

25 The inventors have therefore sought to develop a system that allows dynamic management of the surroundings in a railway or underground station.

3. Objectives of the invention

 The invention aims to provide a dynamic management system of the surroundings in a station or any other public space.

30 The invention also aims to provide, in at least one embodiment of the

invention, a system of this type which helps give users of the station and of public spaces in general a feeling of security, well-being and enhanced passenger flow ensuring a pleasant and positive experience when passing through the station or public space.

5 The invention also aims to provide, in at least one embodiment of the invention, a system of this type which is modular and evolves as needed.

The invention also aims to provide, in at least one embodiment of the invention, a system of this type which can be used to equip all sorts of stations and public spaces in general, whatever their architecture.

10 **4. Disclosure of the invention**

Accordingly, the invention, applied for example to a railway or underground station, relates to a system for dynamically managing the surroundings comprising:

- 15 – a plurality of sensors, referred to as environment sensors, configured to provide information representative of an environment of said public space, referred to as environment information, said environment sensors being intended to be positioned in said public space and/or in the immediate vicinity thereof,
- 20 – a plurality of devices for emitting physical signals that can be parameterised to form stimuli that can be perceived by at least one sensory receptor of the users of said public space, referred to as ambient devices, said ambient devices being intended to be positioned in said public space and/or in the immediate vicinity thereof,
- 25 – a unit for processing said environment information configured to receive and analyse said environment information and to determine and supply parameterisation signals to said ambient devices which are based on said environment information, so as to be able to provide said public space with an ambience tailored to said environment of said public space.
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A system according to the invention therefore allows the operating

parameters of the ambient devices to be adapted depending on the information representative of the environment of said public space. The environment of said public space is characterised for example by its acoustics, lighting, heating / ventilation method, architecture, organisation, facilities, number of users, signage, 5 by the services offered, and in general by all the components of said public space which can provide at least one stimulus that can be perceived by at least one sensory receptor of a user of said public space. The invention is a system capable of modifying the perception of said public space by users by adapting the stimuli to the actual environment of said public space. The ambient devices are devices 10 that emit physical signals configured to stimulate at least one sense of a user of said public space. The invention allows the recovery of information representative of said environment and the control of stimuli-creating devices (which are the ambient devices) such that the ambience thus produced is well adapted to the actual environment of said public space. In other words, the system according to 15 the invention allows dynamic management of the surroundings by recovering information on the actual present environment (inside or in the vicinity outside said public space) and by controlling devices configured to stimulate the senses of passengers so as to provide an environment that is adapted in real time to the well-being of users. The invention allows control of the environment interpreted by 20 users. Said interpreted environment forms the ambience of said public space which is determined on the basis of information representative of the actual environment and of the processing unit which is configured to supply control signals for the ambient devices. Said determination of the control signals by the processing unit is based on predetermined algorithms which are, for example, the 25 result of tests carried out prior to bringing said public space into service, or which are produced as knowledge is acquired of the principles that allow the well-being of a user of said public space to be characterised. In particular, the processing unit can be configured to characterise expertise and knowledge of the principles that allow the concept of the well-being of a user of said public space to be defined. 30 An ambience (or an atmosphere or an environment) is an overall, perceived, multi-sensory and emotive impression of a space or of a situation. The invention

allows this multi-sensory and emotive perception of said public space to be acted upon.

The invention therefore allows the public space to adapt its lighting and its public address system in real time, so as to improve the well-being and flow of people. Other modes such as ventilation and/or signage may be added to control of the ambience in order to boost well-being and circulation.

The ambient devices may be of any type. For example, they may be acoustic devices, light devices, ventilation devices, signage devices, and in general any devices capable of producing an ambient factor.

The sensors may transmit their measurements to the processing unit via a wired or wireless (WiFi, Bluetooth, etc.) network or by a combination of wired and wireless networks. Similarly, the processing unit may transmit its commands to the ambient devices by a wired network, a wireless network or by a combination of the two. Said networks are not necessarily the same as those used to transmit data between the sensors and the processing unit. The wired networks may equally well be electric networks, optics networks, magnetic networks and in general any type of network that allows data to be transmitted.

Advantageously and according to the invention:

- at least one environment sensor is a density sensor intended to be positioned in a given area of said public space and configured to provide, by way of environment information, the density of users in said given area,
- at least one ambient device is an outside lighting device intended to be positioned outside said public space and configured to be able to emit on command a light of a colour selected from a plurality of predetermined colours,
- said processing unit is configured to provide at least one lighting device with a control signal, which is based on said user density, which determines the colour of the light of said lighting device.

According to this variant, at least one given area of said public space is equipped with at least one density sensor configured to provide information

representative of the user density in said area.

According to this variant, the public space further comprises at least one lighting device positioned outside said public space, for example on the approach to said public space. Such a device may be for example an illuminated arch. Said device is controlled by the processing unit to change colour depending on the user density in the area in question. For example, this type of illuminated arch may be lit in green if the density is low, in orange if said density is average and in red if said density is high. A system according to this variant therefore allows users preparing to enter the public space to be provided with information, in the form of a universal colour code, representing the user density in said public space. This allows, for example, users about to enter said public space to be prepared for the number of people they will encounter. This allows users to alter their route. They may also, depending on the number of people perceived, prefer to take the stairs rather than the escalators, for example.

Throughout this document, a 'given area of said public space' is defined as any space of said public space that can receive users. It may for example be the ticket sales hall, train access platforms, a waiting room, the mezzanine or station concourse, etc.

Throughout this document, a 'density sensor' refers to a sensor configured to supply information representative of the user density in a given area. This type of density sensor is for example made up of a video-surveillance camera linked to image processing software configured to detect the number of users in the images captured by the camera. Said sensors may also be piezoelectric sensors positioned in the floor of the area in question. Said sensors may also be software means configured to generate 'ping' requests to the mobile telephones of users and to assess a density from the signals received back. Other means may be used to provide information representative of the user density in a predetermined space.

Advantageously and according to the invention:

- at least one environment sensor is a sensor that detects train arrivals and departures in said public space,
- at least one ambient device is an illuminated water-jet fountain

intended to be positioned outside said public space, and configured to be able to emit on command illuminated water jets of at least one colour selected from a plurality of predetermined colours and of a height selected from a plurality of predetermined heights,

- 5 – said processing unit is configured to provide at least one illuminated water-jet fountain with a control signal, which is based on said train arrivals and departures, and which determines the height and colour of the jets of said fountain.

According to this variant, the public space comprises a water-jet fountain
 10 positioned outside said public space, for example on the approach to said public space. Said fountain is controlled so as to have water jets of a height and colour which is dependent on the train arrivals and departures. For example, the jets may be green to indicate the arrival of a train and red to indicate the departure of a train. Furthermore, the jet may be very high to indicate the imminence of the
 15 arrival and/or departure, or low to indicate a wait before the next arrival or departure. The frequency of the jets may also be linked to the imminence of a departure and/or arrival. A system according to this variant allows a user who is on the approach to said public space to be provided with visual, easily interpretable information representative of an imminent arrival and/or departure of
 20 a train. This therefore allows the experience of users of said public space to be improved, starting from when they are on the approach, by providing said users with information that may reassure said users if they feel they are late or alternatively prompt them to walk faster in order to reach the platforms quickly if they are late.

25 A sensor for detecting train arrivals and departures in said public space may be made up of a camera linked to image processing software or to piezoelectric sensors positioned on the rails in the region of the platforms or movement detectors positioned on the tracks in the vicinity of the entrances and exits of said public space. The information may therefore be transmitted in real
 30 time using the existing communication systems between the train and the station in the particular case of a station.

Advantageously and according to the invention:

- at least one environment sensor is a density sensor intended to be positioned in a user circulation space in said public space and configured to provide, by way of environment information, the user density in said space,
- at least one ambient device is an interior lighting device intended to be positioned in said circulation space and configured to be able to emit on command a light of a colour selected from a plurality of predetermined colours,
- said processing unit is configured to provide at least one lighting device with a control signal, which is based on said user density, and which determines the colour and intensity of the light of said interior lighting device.

According to this variant, the invention allows enhanced well-being in the circulation spaces of said public space, such as stairs, lifts, corridors, etc. According to this variant, the lighting of circulation spaces is based on the user density in said space in order to reduce the feeling of oppression and enhance well-being. According to this variant, the contrast between two successive lights in an area may be increased in order substantially to increase the speed of movement of users. According to this variant, lights that facilitate traveller orientation may be actuated in order to reduce congestion and ease user flow.

Advantageously and according to the invention:

- at least one environment sensor is an outside temperature sensor intended to be positioned outside said public space and configured to provide, by way of environment information, the ambient outside temperature,
- at least one environment sensor is a brightness sensor intended to be positioned outside said public space and configured to provide, by way of environment information, the outside brightness and outside colour temperature,
- at least one ambient device is an interior lighting device intended to

be positioned in a waiting area of said public space and configured to be able to emit on command a light of a colour selected from a plurality of predetermined colours,

- said processing unit is configured to provide at least one lighting device of said waiting area, with a control signal, which is based on said outside temperature and on said outside brightness, and which determines the colour and intensity of the light of said interior lighting device.

According to this variant, a waiting area of said public space, such as a platform, a waiting room, a ticket sales hall, etc., comprises at least one lighting device of which the colour is based on the outside temperature and brightness. This type of lighting device is, for example, a light-emitting diode (LED) device of which the colour or light emitted is based on the outside temperature and brightness. For example, if the outside temperature is low, the processing unit will change the colour of the lighting device to a warm colour. Conversely, if it is hot outside, the processing unit will change the colour of the lighting device to a cool colour. For greater porosity between the outside and inside of said public space, another possible scenario is to reproduce the colour temperature of the environment inside said public space. The colour brightness and temperature sensor allows the intensity and colour of the light emitted by LEDs to be adjusted according to the natural outside light.

Advantageously and according to the invention:

- at least one environment sensor is a density sensor intended to be positioned in a user circulation space in said public space and configured to provide, by way of environment information, the user density in said circulation space, said circulation space further comprising alternating absorbent acoustic materials and reflective acoustic materials along the length of said circulation space,
- at least one ambient device is a pair of interior lighting devices intended to be positioned in the vicinity of an absorbent acoustic material and of a reflective acoustic material respectively in said

circulation space,

- said processing unit is configured to provide at least one pair of interior lighting devices with a control signal, which provides a contrast in brightness between the two lighting devices, said contrast being based on said user density in said circulation space.

5 A system according to this variant allows the speed of movement of users in vertical and/or horizontal circulation spaces of said public space to be defined. In particular, it allows the movements of users to be speeded up if said public space is becoming more densely populated. Accordingly, the circulation spaces
10 comprise alternating absorbent and reflective acoustic materials. The lighting is parameterised and depends in particular on the positioning thereof relative to the acoustic materials. In particular, the processing unit is configured to impose softer lighting on a lighting device positioned in the vicinity of an absorbent acoustic material than that imposed on a lighting device positioned in the vicinity of a
15 reflective material. The processing unit accentuates the contrast in lighting when user flow rises. This accentuation of contrast allows the movement of users to be speeded up and therefore improves flow in the public space.

Advantageously and according to the invention:

- 20 – at least one environment sensor is a density sensor intended to be positioned in a given area of said public space and configured to provide, by way of environment information, the user density in said given area,
- at least one environment sensor is a sensor for determining an ambient sound level and intended to be positioned in said given area
25 of said public space,
- at least one ambient device is a device for emitting public address announcements for users present in said given area of said public space,
- 30 – said processing unit is configured to provide at least one announcement emitting device with a control signal which determines the sound level and directivity of the public address

announcements broadcast by said emission device which is based on said user density in said given area and on the ambient sound level of said given area.

5 A system according to this variant allows the sound level and the directivity of the loudspeakers for example of announcements of train departures and arrivals to be adapted to the ambient noise and user density in a given area of said public space. The directivity of the loudspeakers, the gain and frequency equalisation of the announcements relative to the ambient noise and the passenger density is defined to optimise the intelligibility of the messages. For example, the
10 gain is set at 10 dB for an ambient noise level of less than 60 dB and is adjusted to 5 dB for ambient noise levels greater than 60 dB. A system according to this variant also allows the selection, particularly in open public station spaces, only of announcement emitting devices located in the vicinity of users. For example, for a platform with a plurality of loudspeakers positioned along the platform, the
15 density detector provides information on the platform area where the announcements are broadcast, which allows noise pollution for residents of said public space to be limited.

Advantageously and according to the invention:

- 20 – at least one environment sensor is a density sensor intended to be positioned in a given area of said public space and configured to provide, by way of environment information, the user density in said given area,
- at least one ambient device is an air ventilation device, intended to be positioned in said given area of said public space,
- 25 – said processing unit is configured to provide at least one ventilation device with a control signal, which determines a level of ventilation by said ventilation device which is based on said user density in said given area.

30 According to this variant, the ventilation of at least one given area of said public space is based on the user density in said area. This allows a reduction in the discomfort caused by users owing to being crowded with other users.

The different variants of a system according to the invention may of course be implemented together in a public space such as a station to provide a station where the surroundings are managed dynamically depending on a number of items of information representative of the real environment of the station. A
 5 system according to the invention allows a 'smart' station to be created having facilities that adapt to the environmental conditions of the station.

The invention also relates to a system characterised in combination by all or some of the features mentioned above or below.

The invention relates to a public space, such as a railway or underground
 10 station, comprising at least one system as described above.

5. List of figures

Other objects, features and advantages of the invention will appear on reading the following description given solely as a non-limiting example and with reference to the accompanying drawings in which:

- 15 – Fig. 1 is a functional diagram of a system for dynamically managing the surroundings of a station according to an embodiment of the invention,
- Fig. 2 is a schematic view of a station approach implementing a system according to an embodiment of the invention,
- 20 – Fig. 3 is a schematic view of an underground station implementing a system according to an embodiment of the invention,
- Fig. 4 is a schematic view of a station circulation space implementing a system according to an embodiment of the invention,
- 25 – Fig. 5 is a schematic view of a station platform implementing a system according to an embodiment of the invention,
- Fig. 6 is a schematic view of an underground station implementing a system according to an embodiment of the invention.

6. Detailed description of an embodiment of the invention

30 The embodiments of the invention described below principally relate to stations but should not be considered as limiting.

In the figures, scales and proportions are not strictly respected, for the purposes of illustration and clarity. Identical, similar or analogous elements are designated by the same reference signs.

As shown in Fig. 1, a system for dynamically managing the surroundings
5 of a railway or underground station or any other public space according to the invention comprises a plurality of environment sensors configured to provide information representative of an environment of the station or of the space. Said environment sensors comprise, according to the embodiment in the figures, a density sensor 11 of a given area of the station, for example a station platform, an
10 outside temperature sensor 12, an outside brightness sensor 13 and a sensor 14 of the ambient noise in the station.

The management system also comprises a plurality of ambient devices suitable for emitting parameterisable physical signals that can be perceived by a plurality of sensory receptors of users of the station. Said ambient devices
15 comprise, according to the embodiment in the figures, an outside illuminated arch 31, an outside water-jet fountain 32, a public address system device 33 for a given area of the station, for example a station platform, a ventilation system 34 of a given area of the station, for example a station platform, and inside lighting 35.

In other embodiments, the surroundings management system according to
20 the invention may of course comprise other sensors and other ambient devices.

A management system according to the invention also comprises a processing unit 20 of the measurements provided by the sensors 11, 12, 13, 14. Said processing unit 20 is configured to determine and provide parameterisation signals to the ambient devices 31, 32, 33, 34, 35 which are based on the
25 measurements supplied by the sensors. The sensors may transmit their measurements to the processing unit via a wired network, a wireless network (WiFi, Bluetooth, etc.) or by a combination of wired and wireless networks. Similarly, the processing unit 20 may transmit its commands to the ambient devices by a wired network, a wireless network or by a combination of the two.
30 Said networks are not necessarily the same as those used for the transmission of data between the sensors and the processing unit. The wired networks may

equally be electrical networks, optics networks, magnetic networks and in general any type of network that allows data to be transmitted.

The processing unit 20 is implemented for example by a computer equipped with a microprocessor and an electronic board. Said processing unit is
 5 configured to implement a plurality of processing modules, each module being intended to control one or more ambient devices. In general, throughout this document, a module refers to a software element, a subassembly of a software program that can be compiled separately, either for independent use, or to be assembled with other modules of a program, or a hardware element, or a
 10 combination of a hardware element and a software sub-program. Such a hardware element may comprise an application specific integrated circuit (ASIC) or a programmable logic circuit or any equivalent hardware. In general, a module is therefore an element (software and/or hardware) that allows a function to be performed. In the present case, its function is to supply a command to at least one
 15 ambient device which depends on measurements supplied by the environment sensors.

The controls may be determined by usage scenarios recorded in the processing unit 20. Said usage scenarios associate a predetermined control with one or more measurements of one or more sensors, said control being provided by
 20 an empirical understanding of the concept of well-being associated with those measurements, or by prior simulation, or by experience. The controls may also be determined by implementing a predetermined algorithmic routine which associates a predefined control with one or more sensor measurements.

For example and with reference to Fig. 2, an illuminated arch 31 is
 25 controlled by the processing unit 20 depending on the measurements of a density sensor positioned in a given area of the station. Said sensor is for example a passive infrared pedestrian counter, known to persons skilled in the art, to give an indication of the pedestrian flow in a given area. Such a sensor is for example positioned on a platform of the station. The control unit 20 is configured to
 30 determine three levels of density, low density corresponding for example to fewer than one user per m^2 , high density corresponding to more than four users per m^2

and average density corresponding to the density between low density and high density. Said values are of course purely illustrative data and do not limit the scope of the present invention. The control unit 10 then transmits, depending on the measurement supplied by the density sensor, a control to the illuminated arch

5 31. Said illuminated arch 31 is for example an arch of light-emitting diodes (LEDs) comprising alternating green LEDs, orange LEDs and red LEDs, or alternatively red, green, blue (RGB) LEDs. Said LEDs are positioned for example to frame an access door into the station. The processing unit 10 only controls the switching on of the green LEDs if the density determined is low. The processing

10 unit only controls the switching on of the orange LEDs if the density is determined as average. Finally, the processing unit only controls the switching on of the red LEDs if the density is determined as high.

According to another example, and with reference to Fig. 2, the system comprises an illuminated water-jet fountain 32 and a sensor for detecting train

15 arrivals and departures. Said sensor for detecting train arrivals and departures is not shown in the figure for reasons of clarity. It may be, for example, a pair of piezoelectric sensors positioned on the rails in the region of the platforms, a sensor at each end of the station, and connected to the processing unit 20. Actuation of a first sensor determines the arrival of a train and actuation of the

20 second sensor determines the departure of a train. The processing unit 20 may for example be configured to control the water-jet fountain 32 so that the frequency and/or height of the jets represents the imminence of the arrival and/or departure of trains, by using timetables and/or using other sensors positioned along the track upstream of the station.

25 According to another example as shown in Fig. 3, the surroundings management system comprises an outside temperature sensor 12. Said sensor is positioned for example on the roof of a station building. The system also comprises an outside brightness sensor 13. Said sensor 13 is for example positioned alongside the temperature sensor 12. According to another variant, said

30 sensor is a meteorological station configured to provide both the outside temperature and the outside brightness.

The system further comprises a lighting device 35 of a given area of the station, for example a station platform. Said device comprises for example a fibre optics network 40 arranged between light sensors 36 positioned outside the station and the station platform so as to direct outside light to the platform. This allows natural light to be provided in the region of the station platform. The lighting device 35 further comprises LEDs, the colour of which can be parameterised on command. Thus, the temperature of the colours of the lighting device 35 is dependent on the real outside temperature. The processing unit 20 comprises a module for changing the colour of the LEDs of the lighting device 35 to a warm colour if the outside temperature is low, for example less than 10°C. Conversely, the processing unit 20 changes the colour of the LEDs to a cool colour if the outside temperature is high, for example over 25°C. The processing unit 20 also controls the intensity of the lighting device 35 depending on brightness measurements provided by the sensor 13. Different variations in brightness are possible depending on the measurements. For example, the processing unit determines a delta value between the real brightness and a default brightness and applies said measurement delta to the brightness of the lighting device.

According to another embodiment and with reference to Fig. 4, the system comprises a density sensor arranged in a user circulation corridor. Said sensor is not shown in the figure and is for example a piezoelectric sensor housed beneath the surface of the floor 51 of the circulation corridor. Said corridor comprises alternating absorbent materials 41 and reflective materials 42, in particular of sounds, in other words acoustic materials, along said circulation corridor. Moreover, the system comprises a pair of interior lighting devices 35a, 35b intended to be positioned in the vicinity of an absorbent material 41 and of a reflective material 42 respectively. Said lighting devices 35a, 35b are for example LED lights.

According to this embodiment, the processing unit 20 is configured to impose softer lighting on each lighting device 35a positioned in the vicinity of an absorbent material 41 than that imposed on each lighting device 35b positioned in the vicinity of a reflective material 42. Moreover, the processing unit is

configured to accentuate the contrast in lighting if the density sensor indicates an increase in the flow of passengers in the corridor. Said accentuation of the contrast helps speed up the movement of users and thus improves flow in the station. Said increase in the contrast is for example proportional to the increase in the flow of users in the corridor.

According to another embodiment, and with reference to Fig. 5, the system comprises a density sensor arranged on the station platform and a plurality of loudspeakers 33 distributed evenly along the platform. The processing unit 20 is configured to be able to limit the broadcasting of announcements only to the loudspeakers 33 located in platform areas where the presence of users is confirmed by the density sensor.

In a variant or in combination, the system further comprises a detector 14 of the level of ambient noise, and the processing unit 20 adapts the level of the announcements to the level of noise detected.

According to another embodiment, and with reference to Fig. 6, the system comprises a density sensor 11 which in this embodiment is a video-surveillance camera linked to person-counting software. The system also comprises a plurality of ventilator fans 34 arranged on the side walls of the platform. The processing unit 20 controls the ventilator fans 34 as soon as the user density exceeds a predetermined value, for example four users per m^2 . In a variant, the ventilation is proportional to the user density.

The invention is not limited simply to the embodiments described. In particular, other types of sensors may be used and other ambient devices may be envisaged. Moreover, the processing unit may be configured to provide other controls for ambient devices depending on one or more of the sensors used.

CLAIMS

1. System for dynamically managing the surroundings of a public space such as a railway station or an underground station comprising:

- 5 – a plurality of sensors, referred to as environment sensors (11, 12, 13, 14), configured to provide information representative of an environment of said public space, referred to as environment information, said environment sensors (11, 12, 13, 14) being intended to be positioned in said public space and/or in the immediate vicinity thereof,
- 10 – a plurality of devices for emitting physical signals that can be parameterised to form stimuli that can be perceived by at least one sensory receptor of the users of said public space, referred to as ambient devices (31, 32, 33, 34, 35), said ambient devices being intended to be positioned in said public space and/or in the immediate vicinity thereof,
- 15 – a unit (20) for processing said environment information configured to receive and analyse said environment information and to determine and supply parameterisation signals to said ambient devices (31, 32, 33, 34, 35) which are based on said environment information, so as to be able to provide said public space with an ambience tailored to said environment of said public space.
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2. System according to claim 1, wherein:

- 25 – at least one environment sensor is a density sensor (11) intended to be positioned in a given area of said public space and configured to provide, by way of environment information, the density of users in said given area,
- at least one ambient device is an outside lighting device (31) intended to be positioned outside said public space and configured to be able to emit on command a light of a colour selected from a plurality of predetermined colours,
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- said processing unit (20) is configured to provide at least one lighting device (31) with a control signal, which is based on said user density, and which determines the colour of the light of said lighting device (31).

5 **3.** System according to either claim 1 or claim 2, wherein:

- at least one environment sensor is a sensor that detects train arrivals and departures in said public space,
- at least one ambient device is an illuminated water-jet fountain (32) intended to be positioned outside said public space, and configured to be able to emit on command illuminated water jets of at least one colour selected from a plurality of predetermined colours and of a height selected from a plurality of predetermined heights,
- said processing unit (20) is configured to provide at least one illuminated water-jet fountain with a control signal, which is based on said train arrivals and departures, and which determines the height and colour of the jets of said fountain.

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4. System according to any of claims 1 to 3, wherein:

- at least one environment sensor is a density sensor (11) intended to be positioned in a user circulation space in said public space and configured to provide, by way of environment information, the user density in said space,
- at least one ambient device is an interior lighting device intended to be positioned in said circulation space and configured to be able to emit on command a light of a colour selected from a plurality of predetermined colours,
- said processing unit (20) is configured to provide at least one lighting device with a control signal, which is based on said user density, and which determines the colour and intensity of the light of said interior lighting device.

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30 **5.** System according to any of claims 1 to 4, wherein:

- at least one environment sensor is an outside temperature sensor

- (12) intended to be positioned outside said public space and configured to provide, by way of environment information, the ambient outside temperature,
- 5 – at least one environment sensor is a brightness sensor (13) intended to be positioned outside said public space and configured to provide, by way of environment information, the outside brightness,
 - at least one ambient device is an interior lighting device (35) intended to be positioned in a waiting area of said public space and configured to be able to emit on command a light of a colour selected from a plurality of predetermined colours,
 - 10 – said processing unit (20) is configured to provide at least one lighting device of said waiting area with a control signal, which is based on said outside temperature and on said outside brightness, and which determines the colour and intensity of the light of said interior lighting device (35).
- 15 **6.** System according to any of claims 1 to 5, wherein:
- at least one environment sensor is a density sensor (11) intended to be positioned in a user circulation space in said public space and configured to provide, by way of environment information, the user density in said circulation space, said circulation space further comprising alternating absorbent acoustic materials (41) and reflective acoustic materials (42) along the length of said circulation space,
 - 20 – at least one ambient device is a pair of interior lighting devices (35a, 35b) intended to be positioned in the vicinity of an absorbent acoustic material (41) and of a reflective acoustic material (42) respectively in said circulation space,
 - 25 – said processing unit (20) is configured to provide at least one pair of interior lighting devices (35a, 35b) with a control signal, which provides a contrast in brightness between the two lighting devices, said contrast being based on said user density in said circulation
 - 30

space.

7. System according to any of claims 1 to 6, wherein:

- 5 – at least one environment sensor is a density sensor (11) intended to be positioned in a given area of said public space and configured to provide, by way of environment information, the user density in said given area,
- at least one environment sensor is a sensor for determining an ambient sound level and intended to be positioned in said given area of said public space,
- 10 – at least one ambient device is a device for emitting public address announcements (33) for users present in said given area of said public space,
- said processing unit (20) is configured to provide at least one announcement emitting device with a control signal which
- 15 determines the sound level of the public address announcements broadcast by said emission device which is based on said user density in said given area and on the ambient sound level of said given area.

8. System according to any of claims 1 to 7, wherein:

- 20 – at least one environment sensor is a density sensor (11) intended to be positioned in a given area of said public space and configured to provide, by way of environment information, the user density in said given area,
- at least one ambient device is an air ventilation device (34),
- 25 intended to be positioned in said given area of said public space,
- said processing unit (20) is configured to provide at least one ventilation device with a control signal, which determines a level of ventilation by said ventilation device which is based on said user density in said given area.

- 30 9. Public space, such as a railway station or an underground station comprising at least one system according to any of the preceding claims.