Delivery system and method and door bell system.

Delivery system, comprising a database comprising data relating to at least one delivery to be made and at least one intended delivery address for an addressee for said delivery, and at least one delivery vehicle, wherein the delivery vehicle and/or a delivery person designated to said vehicle is provided with a first communication system and the at least one addressee is provided with a second communication system, the delivery system further comprising a computer system for providing data from the database to the first communication system formed by or including data about the at least one delivery and said delivery address, wherein the delivery system further comprises a proximity detection system designed for detecting proximity of the delivery vehicle and/or the delivery person to the delivery address; and
- wherein the second communication system is designed for communicating with the first communication system for providing an alternative delivery address for the delivery, especially during the delivery of said item and/or
- wherein the computer system is designed for providing at least one alternative delivery address during delivery, said alternative delivery address provided from the database.
Title: Delivery system and method and door bell system

The invention relates to a delivery system for items, such as consumer goods by delivery service, mail or the like.

Presently a consumer ordering an item, for example via a web shop through the Internet, will provide an addressee and a delivery address for delivery of the item. The web shop will have the item packaged for transport and then a delivery service will have the item delivered to the address provided by the consumer, which may be his own address or different address. To this end a delivery vehicle, such as a truck, car, bike or pedestrian will bring the item to the delivery address for delivery. If the addressee is present at the delivery address he or she may accept the item, meaning that the delivery is or at least can be completed. However, if the addressee is not present or at least not in a situation to accept the item, the delivery vehicle will have to take the item back into the vehicle for either delivery at later moment in time or to be picked up by the addressee at a designated location, such as a post office or depot. This means that the delivery cannot be completed at the desired moment. Sometimes the delivery is completed by an unasked-for delivery at a nearby neighbor house, this without the consent of the addressee, and hence with a loss of trust in the delivery system.

In The Netherlands presently up to about 40% or more of deliveries too large to be inserted through a letter box or for which have to be signed by an addressee cannot be delivered at the designated time the driver arrives at the designated address and has to be taken back, for later delivery or delivery at a depot for retrieval by the addressee. This is costly and ineffective, results in increased traffic and therefore pollution and means that the addressee will receive the item at a later moment in time, which may be a day or more later.
It has been proposed to deliver items not at an addressee's home address or office address, but at a designated place, such as a store or post office, for retrieval by the addressee. This means that the delivery can be made by the delivery service at any time during opening hours of said designated place and that the addressee can retrieve the item delivered at similar hours. However, this system may be useful for relatively small items, but not for larger deliveries.

It has also been proposed to provide a box at the address for delivery, which can be opened by the delivery person for depot of the delivery in said box and by the addressee for retrieval of said delivery therefrom. This however requires relatively much space at the addressees outside area, for positioning of such box, which box has to be well protected against theft and break in. Moreover such system is costly and necessitates both the addressee and the delivery person to have means for accessing said box, such as a code or key. This makes such system impractical because different delivery services may be required to use such system. Furthermore again such system is at best limited to relatively small deliveries and may prevent multiple deliveries.

Therefore there is a need for an alternative delivery system and method. There is a need for a delivery system and method with which deliveries can more often successfully be made, even when an addressee is not in a position to receive the delivery at an initially provided, intended delivery address. An aim of the present disclosure is to provide a system and method for delivery at least reducing at least one of the problems of the prior art. Alternatively or additionally the present disclosure aims at providing a system and method for delivery of items to addressees, which provides increased flexibility to the delivery service provider and to the addressees. An aim of the present disclosure is additionally or alternatively to provide a system and method for delivery which reduces the number of times a delivery cannot successfully be made.
At least one of these or other aims can be obtained at least in part with a system and/or method according to this disclosure.

In an aspect a delivery system according to this description can comprising a database comprising data relating to at least one delivery to be made and at least one intended delivery address for an addressee for said delivery, and at least one delivery vehicle. Such vehicle can be any suitable vehicle, such as for example but not limited to a car, van, truck, bike, motorbike, moped or a push cart or the like.

The delivery vehicle and/or a delivery person designated to said vehicle is provided with a first communication system. At least one addressee is provided with a second communication system. The delivery system may further comprising a computer system for providing data from the database to the first communication system. Said data can be formed by or can include data about the at least one delivery and said delivery address.

The second communication system is designed for communicating with the first communication system and/or with the delivery person and/or with a computer system associated therewith, for providing an alternative delivery address for the delivery, especially during the delivery of said item and/or the computer system is designed for providing at least one alternative delivery address during delivery, said alternative delivery address provided from the database.

The delivery system can further comprise a proximity detection system designed for detecting proximity of the delivery person and/or delivery vehicle to the delivery address. With such proximity detection system it can easily be established that a delivery person and/or delivery vehicle is close to the delivery address, such that the delivery system can become active for communication between the first and second communication systems and/or between the first communication system and
the computer system and/or between the second communication system and
the computer system.

In an advantageous embodiment the proximity detection system
can comprise an algorithm for presenting a message to the delivery person
via the first communication system and/or to the computer system when a
proximity signal is provided by the proximity system. In a preferred
embodiment the message can include presenting an image on a screen of the
first communication system, allowing the delivery person to establish
communication with the second communication system. Such image can for
example comprise an image representing a link sending a message to the
second communication system which will warning for said proximity via the
second communication system, for example audively and/or visually and/or
tactually, such as known from warning signals available with a mobile
phone. Such image can alternatively or additionally comprise an image
representing a link for establishing a two way communication between the
first and second communication systems, such that the delivery person and
the addressee or another person designated to the second communication
system can communicate with the delivery person, for example directly via
speech or via email, texting, chat or the like communication means as for
example available with smart phones.

In an embodiment the proximity system can comprise a beacon at
the delivery address for wireless communication with the first
communication system. Such beacon can be based on any radio frequency
system, such as for example but not limited to Bluetooth®, Wi-Fi, Z-Wave or
Zigbee or the like. In a preferred embodiment the beacon and the first
communication system are paired, for example through the computer
system, such that the beacon can only communicate with devices of the first
communication system paired therewith. This means that in such
embodiment only communication devices of the first communication system
“known” to the beacon can communicate with the beacon for the proximity
system and/or only beacons “known” to the computer system can communicate with communication devices of the first communication system.

Alternative to or additional to such beacon the proximity system can comprise one of a GPS type module provided in or for the first communication system for detecting the global position of the delivery vehicle and/or delivery person relative to the delivery address and a visual detection system designed for imaging the environment of a delivery vehicle and/or delivery person and comparing an image taken with an image representative for the delivery address. With both such systems again proximity of a delivery person and/or vehicle to a delivery address can be established, which can have the same or similar effects as discussed here before with respect to the beacon.

When using a proximity detection system in addition to or as an alternative to establishing a communication between the first and second communication systems a non-available signal can be sent directly to the first communication system, for example indicating to the delivery person that the addressee is not available, at least not at the intended delivery address, for receiving the delivery and/or providing an alternative delivery address and/or an alternative delivery time.

In a further aspect the computer system can be programmed to provide the at least one alternative delivery address to the first communication system when a non-available signal is provided from the second communication system. A non available signal can be provided for when for example the addressee has indicated in the second communication system that the delivery cannot be made to the intended delivery address or when for example an appropriate response to a door bell signal due to ringing of a door bell at the designated address is absent during a predetermined period of time. The delivery system may allow the second communication system to provide a redirect signal indicating at least one
alternative address for delivery to the first communication system. Such redirect signal can for example comprise an alternative delivery address to be sent to the first communication system, i.e. especially to the delivery person or delivery vehicle or may be sent to the computer system of the delivery system, indicative for such alternative delivery address, which can then be sent to the first communication system, i.e. especially to the delivery person or delivery vehicle.

The delivery vehicle can comprise a tracking device, such as a GPS based system, for determining the position of the delivery vehicle relative to the intended address for delivery. An approach signal can then be provided to the addressee and/or the second communication system when the vehicle enters into a predetermined range relative to the intended delivery address. Such approach signal can establish said proximity signal or be part thereof. This will for example allow the addressee to prepare for receipt of the delivery, for example by moving timely to the intended address, or may lead to providing the delivery truck and/or delivery person with at least one alternative delivery address, either directly or via said database, when for example the addressee is in no position to receive the delivery at said intended delivery address when the delivery might be expected at the intended address, for example based on the estimated time of arrival at the intended address given the distance between the intended address and the delivery truck and/or person. In such case a non-availability signal can be issued to the computer system and/or first communication system, as discussed before.

In an aspect a delivery system may comprise a second communication system which can comprise a stationary device, which can comprise a screen. The stationary device can for example be mounted near a door at the intended address of delivery, such that it, and especially a screen thereof is visible from outside the intended address, such that a delivery person can approach the stationary device. This may comprise a door bell.
The stationary device can be designed such that an alternative address or several such addresses can be presented to the delivery person at the intended address. Thus when the delivery is not or cannot be accepted at the intended address the delivery person is provided with at least one alternative address for deliver. If several such addresses are presented the delivery person may choose or try several of these addresses.

Similarly the second communication system may comprise a hand held device, such as a smart phone or tablet, which a person can carry with him/her.

A door bell system suitable for use in such system may comprise at least a door bell, a door bell control system and an electronic screen. The door bell control system may comprise a memory, an input device and/or a communication unit. The memory may be designed for containing address information. The input device may be designed for receiving at least one address from outside the door bell system. In both cases an interface may be provided for presenting the at least one address on said screen retrieved from said memory and/or provided through said input device. The door bell may be coupled to the door bell control system for activating the interface for presentation of the information on said screen. Alternatively or additionally the door bell system may comprise a communication unit for communicating with a hand held device, such as a smart phone or a laptop, preferably suitable for two way communication. This allows a holder of the hand held device to communicate with a person at or near the door bell, for example for providing an alternative address, and/or for exchanging other information.

In embodiments the delivery system can comprise a hand held communication device and a stationary device comprising a signal unit providing a signal to the hand held device when a signal is provided from the stationary device, for example when a doorbell at an intended delivery address is rung, wherein the delivery system is designed such that:
at least one alternative delivery address and/or alternative information can be sent from the hand held communication device to the stationary device, to be presented on a screen of the stationary device and/or to the first communication system; and/or

- at least one alternative delivery address is presented on the screen which is derived from the database or has been entered in the second communication device, especially in the stationary device.

In embodiments the delivery system can comprise a stationary device comprising a signal unit and a hand held unit for wireless communication with said stationary device, wherein the delivery system is designed such that at least one alternative delivery address and/or alternative information can be sent to the hand held communication device from the computer system and/or the second communication system, to be presented on a screen of the hand held device.

Thus an addressee can for example actively propose at least one alternative delivery address to a delivery person, or alternatively or additionally can provide the delivery person with other information, in real time and/or can activate the delivery system to present one or more alternative delivery address(es) on said screen and/or the first communication device, derived from the data base or for example from a memory in the stationary device.

In a further aspect a method according to this description can be a method for delivery of at least one item to at least one delivery address of an addressee of the item, wherein an intended delivery address for said item is entered into a first communication system available to a delivery person; and wherein at least one alternative delivery address for the item is provided to the delivery person, prior to or during delivery of said item. This allows the delivery person for example to avoid going to the intended delivery address and directly going to an alternative delivery address as provided to him/her.
During delivery of the item proximity of a delivery person and/or delivery vehicle associated to said delivery person to the intended delivery address can be detected. When said proximity is within a predetermined range a proximity signal can be provided to the first communication means and/or to a second communication means held by the addressee or a person associated to the addressee, such that a communication can be established between the first and second communication means and/or between the first communication means and the computer system, for providing an alternative delivery address and/or an alternative delivery time.

The at least one alternative delivery address and/or delivery time may be provided:

- via a second communication system, provided to the addressee, to the delivery person and/or
- via a computer system, said alternative delivery address provided from a database connected to the computer system, to the first communication system and/or the second communication system.

The second communication device may comprise a screen or the like at the intended delivery address on which the alternative delivery address and/or time may be presented to the delivery person. Alternatively or additionally the said alternative delivery address and/or time may be sent to the first communication device, such as but not limited to a hand held device held by the delivery person. The alternative delivery address or addresses and/or time may be provided in real time or may be retrieved from for example a database of the delivery system or from a memory of the first and/or second communication system. Alternatively the alternative delivery address(es) and/or time may be retrieved from external database or databases, for example a social network database or agenda.

During delivery an approach signal can be communicated to the addressee, especially to the second communication system, when the delivery person enters a predetermined range relative to the primary
delivery address, wherein the approach signal triggers the providing of the alternative delivery address or delivery time to the delivery person. This allows the delivery person to amend his/her route based on the alternative delivery address and/or time provided, at a relatively early stage, saving time and driven kilometers, since he/she does not have to go to the intended delivery address at the intended delivery time. Such approach signal can be a proximity signal as discussed before. Preferably the alternative route is calculated automatically and presented to the delivery person.

Additionally or alternatively at the delivery address the at least one alternative delivery address may be presented to the delivery person by a presentation device forming part of the first or second communication system, preferably on a screen, especially after signaling the delivery person’s presence at or near the delivery address, for example by ringing a door bell, or a tracking signal of the vehicle or delivery person or the like or said proximity signal.

The at least one alternative delivery address or time can be presented to the delivery person after ringing a door bell connected to a door bell system, wherein:

- the addressee sets a forward signal in the door bell system prior to the delivery, which forward signal initiates the presentation of the at least one predetermined alternative delivery address; and/or

- upon ringing the door bell the addressee receives a signal from the door bell system via the second communication system, where after the at least one alternative delivery address is presented to the delivery person, via said screen and/or via the first communication system.

In this description a door bell has to be understood as at least meaning a system with which a first person can indicate to a second person his or her presence at or near the premises of the second person. This may for example be a hardware door bell provided at or near a door, gate or other entry blocking element to a premise, or a virtual door bell, for example
designed for wireless communication with a handheld or other electronic
device held by the second person or a virtual doorbell presented on a hand
held device of the delivery person when arriving within a predetermined
proximity of the delivery address, for example using a proximity system as
discussed. If a proximity signal is received by a first communication system
from a series of systems at the same time, they may be presented as a group
or series of groups or individually to the delivery person, such that he or she
can select an appropriate one. Alternatively they may be coupled to items to
be delivered by the delivery person at that given time, such that only the
proximity signal or signals or image associated thereto associated with a
delivery to be made is or are presented to the delivery person to chose from.

In a system or method according to this disclosure one alternative
delivery address and/or time can be provided to a delivery person when the
delivery cannot be made at the intended delivery address and/or the
delivery time. Alternatively several such alternative delivery addresses
and/or times could be provided simultaneously or subsequently. By
providing a multiplicity of such alternative delivery addresses and/or times
the delivery person is allowed to make a choice, for example based on his or
her route for further deliveries to be made, experience of success at one or
more of these alternative addresses, or for picking a second alternative
address or time for delivery, should a first such alternative address also not
be successful for delivery of the item. Such rescheduling and choice of an
alternative address and/or time could also be made automatically based on
an algorithm provided in the delivery system.

In general a delivery system may provide an addressee or a
person associated with the addressee of a delivery to be made to
communicate with a delivery person, directly or indirectly, preferably during
the delivering process of the delivery, in order to redirect the delivery person
to a different delivery address and/or to a different delivery time.
In further elucidation of the present disclosure embodiments of a delivery system, door bell system and delivery method will be described, with reference to the drawings, which are only shown in elucidation and should not be understood as limiting the disclosure in any way. In the drawings:

Fig. 1 schematically shows a delivery system according to the description;

Fig. 1A schematically shows an embodiment of a device for use in a system according to the disclosure;

Fig. 2 schematically shows an alternative embodiment of a delivery system according to the description;

Fig. 3 schematically shows an alternative embodiment of a device for use in a system according to the description;

Fig. 4 schematically shows a further embodiment of a system using a beacon;

Fig. 5 schematically shows a hand held device showing a link to a communication system of a system according to the disclosure, which link by way of example is shown as a virtual door bell;

Fig. 6 schematically shows a hand held device showing an alternative delivery address for an item to be delivered; and

Fig. 7 schematically an alternative representation of information on a hand held device for a delivery person.

In this description different embodiments of systems and parts thereof, as well methods preformed therewith are disclosed and described by way of example only. In these embodiments the same or similar elements have the same or similar reference signs. Combinations of elements of the embodiments shown are also considered to have been disclosed herein.

In this description an item or a delivery have to be understood as meaning one or more elements or items which by itself or together have to be delivered to a single intended address and addressee. “an item” to be
delivered can therefore also be a plurality of items, unless specifically indicated differently, and may be similar to “a delivery” when the latter is used as a noun.

In this description a communication system may comprise or be formed by any suitable communication devices for communicating data such as address data between two electronic devices. A communication system can for example comprise a hand held device such as a mobile or smart phone, tablet or laptop computer, Wi-Fi or Bluetooth® based system, radio transmitter or similar system for communication, preferably wireless communication. A communication within the meaning of this disclosure can also comprise stationary communication devices, which may communication via known or dedicated wire based or wireless protocols.

In this description a delivery vehicle can be any vehicle suitable for transporting and delivering items, such as but not limited to a car, van, truck, bike, motorbike, moped, drone or a push cart or the like. A delivery person should be understood as meaning at least one person involved with making a delivery of a delivery or item to a delivery address.

In this description an intended delivery address should be understood as an address initially provided to a delivery service or an organization requesting such delivery service to make the delivery, for example an address of delivery entered by an addressee or consumer upon ordering an item. An alternative address has to be understood as an address for delivery alternative to the intended delivery address or to another alternative delivery address.

In a system according to the present disclosure deliveries can be made to a delivery address, which may be an intended delivery address. If delivery at the intended delivery address is not possible, for example because the addressee is not in a position to receive it, an alternative delivery address can be provided to the delivery person, so as to allow him to deliver the delivery cq item nevertheless. In embodiments the at least one
alternative delivery address can be provided real time by the addressee, for example to a communication system of the delivery person or delivery vehicle or presented on a screen at the intended delivery address. In embodiments at least one alternative delivery address can be provided prior to or during a delivery route executed by the delivery person and/or vehicle.

Alternative delivery addresses can for example be provided from a database of the delivery system or can be entered into a communication system provided to the addressee. To that end the delivery system, for example the communication system provided to the addressee, can comprise a door bell system having or connected to a screen, such that the at least one alternative delivery address can be presented on said screen to the delivery person. Said screen can for example be provided at or near the intended delivery address or can be part of a device provided to the delivery person, such as but not limited to a hand held device such as a mobile phone smart phone or tablet. The door bell system can comprise a hard ware door bell and/or a virtual door bell, for example presented on a hand held device such as a mobile phone, smart phone or tablet issued to the delivery person and/or in the delivery vehicle, for example via the described proximity system.

In this description proximity is to be understood as a delivery person and/or delivery vehicle being within a predetermined range from an intended delivery address. A proximity signal can at least be understood as a signal generated when said proximity is obtained, that is at least comprising a signal generated, indicating that a delivery vehicle and/or delivery person enters into said predetermined range from a delivery address. Such proximity signal can for example be generated by and/or received by a wireless beacon positioned at or near the delivery address, communicating with a device held by the delivery person or provided in the delivery vehicle. For example but not limited to a signal generated when a hand held device of the delivery person is brought within said proximity of a
wireless beacon provided at or near the delivery address, which pair or have been paired with each other, such that it is recognized that the hand held device and therefore the delivery person is within said proximity. Alternative to the beacon the position of the delivery person and/or vehicle can be established using GPS type systems, with which the proximity can be defined. A further example could be using a visual recognition system, such as but not limited to Layar® or Google Glass®, with which the position of a delivery person and/or delivery vehicle could be assessed, for generating the proximity signal. A proximity signal can also be a position signal or an approach signal.

In this description a beacon, especially a wireless beacon, is to be understood as at least encompassing a device or element which periodically or constantly emits a signal, especially a wireless signal forming or including a code, especially a unique code, identifying said beacon to an apparatus designed for recognizing said signal. To that end for example such apparatus can be provided with software, such as an app, and a receiver for said signal, such that such apparatus can define the identity of the beacon and, for example via a database, for example the identity of the address where the beacon is provided, personal information of an addressee associated with such address and/or beacon and/or information associated with an item to be delivered at said address and/or to said addressee.

A proximity signal, position signal or approach signal can be used for early recognition of a delivery person and/or vehicle in the vicinity of an intended delivery address of or even for example recognizing such vehicle starting to move in the direction of an intended address for delivery of an item. Such recognition will for example enable an addressee to move to the intended delivery address or prepare for receiving said item at said address or have it received by a third person, or for example indicate that he will not be in a position to receive the item at the intended delivery address and/or at an intended time of delivery, in which case an alternative address for
delivery and/or an alternative time for delivery can be provided to the delivery person and/or delivery vehicle, as described herein. Such may for example avoid the delivery person having to get out of the vehicle at the intended delivery address or even avoid the delivery person to go all the way to the intended delivery address. He can then for directly continue his delivery route, can rearrange the delivery addresses of his route and/or the time schedule, or can take other appropriate action. In an advantages embodiment the delivery route can be adjusted, preferably automatically, when a delivery address is changed during the execution of said delivery route, such that at all times the most efficient delivery route is defined for the delivery person cq delivery vehicle.

In a system according to the description the software can be set such that only proximity signals, approach signals and/or position signals are generated or at least recognized of addressees and/or delivery addresses for which items to be delivered are carried by the delivery person or delivery vehicle.

In this description where reference is made to an addressee or delivery person, the male form may be used, which should however be understood as that it can also be the female form.

Fig. 1 shows schematically shows a delivery system 1, comprising a computer 10 and a database 2 in which data is stored about items 3 to be delivered and intended delivery addresses 4 and addressees 4A to which the items are to be delivered. For each item 3 an intended delivery address and addressee 4A is stored in the database 2. At least one vehicle 5, here shown as a van, by way of example only, is provided for delivering the items 3. The vehicle 5 and/or a delivery person 6 assigned to said vehicle 5, for example a driver, is provided with a first communication system 7. This first communication system 7 preferably at least comprises a hand held device and/or a vehicle mounted device 7A in which at least one and preferably a series of items 3 to be delivered and related intended delivery addresses are
stored, to be communicated to the delivery person 6, for example by showing these data on a screen 8 of the first communication system 7, for example on the hand held device 7A and/or in the vehicle 5. The communication system 7 can further be provided with or connected to a GPS system 9 for defining a delivery route, based on the delivery addresses as stored. Such delivery route may be generated by the system 7 or the computer 10 or by any other suitable means in a known manner known in the art, for example using a device as provided by TomTom or Google maps.

An intended delivery address 4 can be any private and/or commercial property, here shown as a house 11 with a front door 12. An addressee 4A is provided with a second communication system 13, which can provide a redirect signal, which may be or comprise an alternative delivery address 4B. The second communication system 13 can comprise a hand held device 14 and/or a stationary device 15. Such stationary device 15 can for example be mounted next to the door 12, at an outside of the house 11, such that it can be approached by a delivery person for use and/or inspection. The hand held device 14 can for example be a mobile telephone, a smart phone or a tablet.

A stationary device 15 can comprise a door bell system 16 comprising a door bell 17, a doorbell control system 18 and an electronic screen 19 for presenting information. The control system can comprise a memory 20 and an interface 23 for presenting information from the memory 20 onto the screen 19, visible to somebody approaching the door 12. Additionally or alternatively the doorbell system can comprise an input unit 31 for entering data into the doorbell system 16, for example via a key board or, using a communication unit 22, via a device held by the addressee 4A, such as a hand held device 14, for example a mobile phone, a smart phone or a tablet. This can be done via a wired system or, preferably, wireless, such as by Wi-Fi, Bluetooth® or phone band, such as but not limited to GSM, or using an appropriate Internet protocol.
A system 1 can for example be used as follows. A route for delivery is defined for the vehicle 5, based on the intended addresses for the items 3 to be delivered. Then the vehicle will move in the direction of the first address on the route, for delivery of the first item 3. At the intended address 4, i.e. the house 11 the delivery person will ring the doorbell 17. If the addressee 4A is in a position to accept the delivery he will open the door 12 and the item 3 can be delivered. However, if the addressee 4A is not in a position to accept the delivery, an alternative delivery address 4B can be provided to the delivery person 5.

In a first embodiment the alternative delivery address can have been provided by the addressee prior to the delivery, visible on the screen 19. The delivery person will read the alternative delivery address 4B and can add this alternative address to the route, for delivery of the item at the alternative delivery address.

In a second embodiment ringing the doorbell 17 can set off a timer in the doorbell system 16. When a predetermined period after ringing has been passed a non-available signal may be generated by the doorbell system 16. In an embodiment the non-available signal will set off the interface 23 for presenting an alternative delivery address 4B on the screen 19. In an embodiment the non-available signal may be communicated by the communication unit to the device 14 held by the addressee 4A. This can be done after said predetermined period or may be done directly upon ringing of the doorbell 17. The addressee 4A can then communicate with the communication device of the doorbell system 16, in order to set off the interface 23 for presenting an alternative delivery address 4B on the screen 19.

The alternative address 4B may then be retrieved from the memory 20 or may be entered directly into the input device by the addressee 4A, through the communication device.
In a further embodiment the non-available signal may be communicated to the computer 10. The computer 10 can then provide an alternative delivery address, for example retrieved from the database, and can communicate this to the doorbell system for presentation on the screen.

Alternative to or in addition the alternative delivery address 4B can be provided to the first communication system 7, for example for presentation on a screen on a hand held device 7A of the delivery person or into the GPS system. The alternative delivery address 4B can then be added to the route or can be used for recalculating the route in order to optimize the route, taking into consideration the alternative delivery address 4B. Also an auditive signal can be provided to the first communication system, such as the hand held device 7A, in order to inform the delivery person 6.

Fig. 2 shows a system similar to that of fig. 1. However, in this embodiment the vehicle 5 is provided additionally with a tracking system 24, for example coupled to the GPS system. The tracking system 24 can determine the position of the vehicle 5 and can provide an approach signal when the vehicle enters into a predetermined range relative to the intended delivery address. This range may be a range in distance or estimate time to arrival at the intended delivery address 4. In fig. 2 this range has been represented as a circle 25 around the intended delivery address 4.

The approach signal can be provided to the addressee 4A, for example by sending it to the second communication system 13, especially to the device 13 held by the addressee and/or to the stationary device 15.

When sent to the addressee 4A, the addressee can send a non-available signal to the stationary device 15, for presenting an alternative delivery address on the screen, in any way as discussed here before with respect to fig. 1, or can make himself available for receipt of the delivery at the intended address. Sending a non-available signal can be automatic or can be done actively by the addressee 4A. When sent to the stationary
device 15, the stationary device may be set to respond to the first communication device indicating whether the addressee will be available for receipt of the delivery cq item 3 or not. In the latter case an alternative delivery address will be provided to the first communication system, especially to the delivery person, and/or to the GPS and/or tracking device for recalculating the delivery route at an early stage, i.e. well prior to the vehicle arriving at the intended delivery address. Obviously the route can also be (re)calculated by the computer.

Fig. 3 shows a doorbell system 16 system, comprising the doorbell 17 and optionally a screen 19. Also a camera 26 is provided, and a communication unit 22, suitable for communication at least with a hand held device 14, such as a mobile phone, smart phone or tablet. This doorbell system 16 may be similar to that as described before, and allows the user of the hand held device to get images from the camera 26 presented to him on his hand held device. Preferably a microphone 27 is also provided, allowing two-way communication with a person ringing the doorbell 17. If that person is for example a delivery person, again an alternative delivery address 4B may be provided to him, for example on the screen 19 or on the first communication system, as described. Additionally or alternatively other information may be provided to said person, audibly and/or visually and based on for example the image shown to him and/or further information provided the holder of the hand held device 14 can decide to take further action, such as remotely opening a door, gate or such closure, connecting the person at the door to another person such as for example a neighbor or informing official bodies such as the police, should such appear necessary.

Fig. 4 shows a further embodiment of a system, wherein schematically an intended address 4 is represented by a house 11 with a door 12, close to which a beacon 21 is provided. This beacon 21 may be incorporated in a stationary device 15 or doorbell system 16 as described
before, or can be provided by itself. The beacon 21 is preferably a device which can communicate wireless with the first communication system 7 when within a communication range of said beacon 21. For example the beacon 21 can be a known wireless Wi-Fi beacon or Bluetooth® beacon or another, preferably short range wireless beacon, communicating with a hand held device 7A of the delivery person 6 and/or a similar device in the delivery vehicle 5. Such beacons and communication protocols are well known in the art.

The beacon 21 periodically, intermittently or constantly emits a signal, preferably a coded signal indicative for the beacon 21, such as a coded Wi-Fi or Bluetooth® signal. The code is preferably unique to said beacon 21. The beacon 21 and the relevant code is preferably known to the system 1, for example stored in the computer 10 or database 2. The first communication system 7, such as the hand held device 7A, can then be provided with software such as an app which recognizes the beacon 21 by its signal and/or the code. The signal can be understood as a proximity signal. Preferably the beacon 21 can be set for different ranges, for example but not limited to a first range up to a few meters, a second range up to 10 to 15 meters and a third range up to about 75 to 100 meters. Thus for example an addressee 4A can set his beacon 21 for one of these ranges, depending on how soon he wants a proximity signal to be provided. In fig. 4 schematically the ranges are indicated by R1, R2 and R3 respectively.

Once the beacon 21 is recognized by the first communication system 7 by said proximity signal, different events can occur.

The proximity signal can set the software in the first communication system to show a link L on the screen 8 of the hand held device 7A and/or in the vehicle 5, which can for example represent a virtual door bell 17. By activating said link L the delivery person 6 can inform the addressee 4 of his proximity, for example through a physical bell at the intended address 4 and/or through a attention signal A, for example
received on his computer of on a hand held device 14 of the second communication system 13, for example by sound, vibration and/or image, in fig. 5 represented by “WIZZ”. Preferably the link L on the screen 8 will only be shown when the relevant device 7A of the first communication system 7 can recognize the relevant beacon 21, for example by having been paired with it through the computer 10 and database 2, this event can only occur through the first communication system 7 and thus the addressee 4A will know that the signal A received comes from a known party. The software such as an app of the first communication system may be set such that the identity of the device 7A communicating with the beacon 21 also becomes known to the addressee 4A.

When the addressee receives said attention signal A, for example on his hand held device 7A, a communication link may be established between the first and second communication systems 7, 13, for example between the hand held devices 7A and 14 or between the hand held device 14 and the device 15 or door bell system 16. This can allow the addressee 4A to communicate with the deliver person 6, for example in order to provide him with instructions. These instructions may include an alternative delivery address 4B and/or an alternative delivery time, or a refusal of the item 3 or the like. Alternatively the addressee can initiate that an alternative delivery address and/or time is provided to the delivery person directly, for example as such link. Said alternative delivery address 4B can for example be retrieved from the database 2 or the memory 23 of the fixed device 15 or door bell system 16. This can for example be initiated by issuing a non-availability signal to the first communication system 7 and/or the computer 10. The non availability signal can be generated by the system when the addressee has indicated such in or to the system 1. For example by means of an input device 22 or via his hand held device 14. In such embodiment when the first communication system 7 communicates with the
beacon 21, issuing the proximity signal, the non availability signal is
generated or received by the first communication system.

In an embodiment this hand held device 14 can be provided with
software, for example an app with which the system can automatically
detect when the hand held device 14 is outside a predetermined range of the
intended delivery address 4A, which will then set the system 1 to generate
said non availability signal. Such detection can for example be done through
the beacon 21 or via GPS tracking of the hand held device 14 or other
suitable means.

In stead of the link L an alternative delivery address 4B can be
provided directly on the screen 8 for the delivery person 6 and/or delivery
vehicle 5, for example as shown in fig. 6 on the screen 8 of hand held device
7A, in fig. 6 represented by “TEXT”. This can be provided automatically on
the screen 8, that is without involvement of the addressee, for example after
receipt of the non-availability signal.

In embodiments a series of links L and/or alternative delivery
addresses 4B can be shown, for example as pictograms on a map, as
schematically shown in fig. 7. In fig. 7 a map is shown on the screen 8,
showing the intended delivery address 4 as well as a series of alternative
delivery addresses 4B, associated with the intended delivery address 4
and/or the addressee 4A. In fig. 7 alternative delivery addresses 4B are
shown within a certain range from the intended delivery address 4, for
example a few hundred meters. In embodiments only alternative delivery
addresses can be shown available for receiving the item 3. Alternatively all
alternative delivery addresses 4B, associated with the intended delivery
address 4 and/or the addressee 4A within said range can be shown, of which
for example by color differences or otherwise differentiating between such
addresses available for receipt of items 3 and such addresses not available
for such receipt. For example green for available and red for not available.

This will allow the delivery person 6 to chose the most suitable alternative
address. Preferably the relevant pictogram will be a hyperlink to the actual address information which may show up by initiating the (hyper)link or by a “mouse over” showing the information directly on the screen 8. Preferably the delivery person can chose one of the alternative addresses 4B and add it to the delivery route. In embodiments the system 1 may show to the delivery person for some or all of the alternative delivery addresses 4B the consequences of choosing that address 4B, for example for the remaining delivery route, the ETA for the items 3 to be delivered and the like information, in order to even better assess the most appropriate delivery route. In embodiments the delivery person 6 may be able to change the range within which alternative delivery addresses may be found, for example by zooming in or out on the screen 8. Obviously in the other embodiments also the or each alternative address or link can be represented differently, for example on a map, by graphic images or as a list and/or as delivery alternative routes including different alternative delivery addresses. In all embodiments the screen 8 is preferably a touch screen.

In embodiments a non availability signal can be sent directly by the second communication system 13 or by the computer 10, for example through the hand held device 14, to the first communication system 7, once the addressee 4 has indicated to the system 1 that he is or will not be available for receipt of an item 3 at the intended delivery address 4, at an estimated or indicated delivery time, to be processed by the computer 10 or to be shown on the hand held device 7A. Such non availability signal can for example be generated based on an agenda of the addressee 4A. A non availability signal can then for example be defined by periods in such agenda from which it follows that the addressee will not be available for such receipt of an item. Additionally or alternatively an addressee may be provided with the opportunity to indicate such periods of non availability directly in the system 1, for example through a web site associated therewith.
In embodiments the non availability signal indicating one or more periods in which the addressee will not be available for receipt of an item 3, can be set in the system 1, for example actively by the addressee or through an agenda of the addressee communicating with the system 1. This will allow the system for example to calculate a delivery route in which the relevant address can be approached at a period in which the addressee will be available for receipt, or by adding an alternative address 4B to the delivery route instead of the intended delivery address 4.

An approach signal or proximity signal as described can inform an addressee about an estimated time of arrival (ETA), which for the proximity signal may be relatively short, for example seconds or minutes, and for the approach signal may be longer, for example minutes to tens of minutes or even longer. Alternatively or additionally the ETA can be communicated to the system 1, especially to the computer 10 and/or the first communication system 7, such that for example the position of the delivery person 6 and/or vehicle 5 can be assessed, that ETA’s for one or more of the further addresses where deliveries have to be made in the relevant delivery route can be calculated and the route can be amended based on such ETA’s and/or it can be assessed whether the addressee will be available at the intended delivery address at the ETA and, if not, an alternative delivery address or delivery time can be provided.

During his delivery route a delivery person 6 and/or delivery truck may pass a series of beacons 21, some of which are not associated with items 3 to be delivered during the delivery route. Proximity and/or approach signals from and/or to such beacons 21 may nevertheless be used by the system 1. For example by tracking the time when the said signal is exchanged with such beacons 21 the position and/or progress of the vehicle and/or delivery person 6 can be calculated, allowing a periodical or constant calculation of ETA’s for addresses along the delivery route. The data about the progress of the vehicle 5 and/or delivery person 6 during several delivery
routes can be stored in the system 1, for example in the database 2, to be used during future delivery routes, in order to more accurately define ETA's. The system 1 can thus be self learning. Also the data from the progress and/or position of the vehicle can be combined with further information available about for example traffic and/or traffic jams along the calculated route, road works, detours and the like for further optimizing the delivery route.

In the description given here before, the proximity signal is provided by the beacon 21 being positioned at a delivery address 4, actively issuing a signal, to be detected by the first communication system, especially the hand held device 7A. Obviously such beacon 21 can also be a passive element, such as a transponder, which provides a signal only when the hand held device 7A is brought into a predetermined proximity of the transponder.

When the first communication system, especially the hand held device 7A of the delivery person 6 and/or the delivery vehicle 5 is in proximity of a number of possibly relevant beacons 21, a link 21A for some or all of these beacons 21 may come up, which means that the delivery person 6 will have to chose the right one. Alternatively software of the system 1 may be designed such that the first communication system 7 will only provide a link for those delivery addresses and/or addressees for whom the delivery person 6 or delivery vehicle 5 is carrying an item 3 to be delivered. Such link may again be provided on the screen 8 of the hand held device 7A. This will significantly limit the number of links shown, even in a crowded area such as for example an apartment building. Again such links can be represented by a virtual door bell or an alternative delivery address or a communication link for establishing communication with the addressee.

In this description an addressee can define a network of alternative delivery addresses from which an alternative delivery address can be chosen by the system and/or the delivery person, depending on for
example the further deliveries to be made, availability of people at these alternative delivery addresses and the like. Preferably an addressee can define a preferred order of the alternative delivery addresses. Preferably the availability of people at such alternative delivery addresses 4B will be known or can be made known to the system 1, similar as that of the intended addressee 4.

Alternative to or additional to a beacon 21 the position of the delivery person 6 and/or vehicle 5 can be established using GPS type systems, with which the proximity can be defined, as described before. A further example could be using a visual recognition system, such as but not limited to Layar® or Google Glass®, with which the position of a delivery person 6 and/or delivery vehicle 5 could be assessed, for generating the proximity signal. For example a delivery person can periodically or constantly take in images of the environment, which will be recognized through appropriate image recognition software of the system, such that the position of the delivery person cq vehicle can be assessed. In an embodiment the software can extract an image of the intended delivery address or of one or more positions along the delivery route with a known position relative to the intended delivery address, for example from Google® Map’s street view or Layar®. The software of the system 1 can then compare the images taken along the route by the delivery person and/or vehicle with these images of the intended delivery address and/or positions along the delivery route and when a match is found define the position of the delivery person and/or vehicle relative to the intended delivery address.

In alternative embodiments an item can be provided with a delivery code, such as a bar code or a QR code or the like, which can be scanned by the delivery person, for example with the hand held device 7, for example when a door bell 16 is not answered at the intended delivery address. The scanned code can then provide the delivery person with an alternative delivery address or a link as discussed before, presented on the
screen 8 of the hand held device 7 or vehicle 5. The code can be generated by the system 1 based on information presented by a person ordering an item 3, for example through a website, such that the information is scrambled in said code and the information as such will not become available to the delivery person 6, but the link will allow him to establish a connection with the addressee, for example through a mobile phone number, for communication or information or provide an alternative delivery address. In such embodiment the information may be scrambled into said code directly after entering the information into the website, such that only said code is stored in the database, wherein the software of the first communication system can translate said code into the desired link.

As discussed a system 1 according to the disclosure can define a delivery route for a series of items to be delivered, based on e.g. at least one of:

- location of the intended delivery addresses;
- indicated availability or non-availability of the addressees;
- traffic information;
- data stored in the system about earlier delivery routes, alternative delivery addresses provided and other information.

During execution of the delivery route the delivery route can be changed, such as optimized, and/or an alternative delivery route for the remaining items 3 to be delivered can be provided by the system 1, by recalculation, based on further information fed into the system and/or generated by the system 1, preferably real time, for example about at least one of:

- a non-availability signal entered into the system:
- by the addressee 4A through the second communication system 13; or
generated by the system 1 due to for example a change in an agenda of an addressee 4A, said agenda communicating with the system 1, such as for example but not limited to an Outlook® agenda; or
due to a change in a calculated ETA, for example due to an unexpected delay along the delivery route for the delivery person 6 and/or vehicle 5, due to for example but not limited to a traffic accident, road works, or a delay during the delivery of an item;
an alternative delivery address 4B entered into the system by the addressee 4A directly, for example for personal reasons; and/or traffic information entered into the system 1, for example but not limited to information about blocked roads, traffic jams and the like.

Preferably the delivery person can chose to progress with the originally calculated delivery route or follow the further alternative delivery route for the remaining items as proposed by the system. During the execution of the delivery route preferably the addressees of the items 3 to be delivered and/or, if alternative addresses are provided for some or all of the items, a contact person at the alternative address or addresses are preferably informed about the progress of the execution of the delivery route and/or of any changes in said delivery route. This can for example be done through a website or app which shows to an addressee of an item 3 the location of a vehicle 5 and/or delivery person 6 carrying said item 3 on a map, preferably real time. To this end the addressee 4A and/or the said contact person or persons of the alternative address(es) 4B can be provided with a login code identifying him as associated with a specific item or number of items 3. This will allow tracking of the item 3, preferably real time. This website or app can be part of the second communication system, such that it will allow the addressee and/or said contact person to
communicate with the first communication system 7 and/or other elements of the system 1, for example a communication device 7A of a or another contact person through said web site or said app.

In a system 1 according to this disclosure in embodiments also the possibility can be offered to enter a pick up request, requesting a delivery person 6 and/or vehicle 5 to pick up one or more items 3 at an address 4, to be referred to as a pick up address, for example an item 3 previously delivered at such address 4, to be returned to a sender and/or to be delivered to a different address. If such pick up request is entered into the system 1 it can be incorporated into a delivery route. When such pick up request is entered into the system 1 it can be processed, for example by incorporating it into a delivery route which is to be executed later, or by incorporating it into a delivery route during execution of such delivery route, which will lead to calculating an alternative deliver route or at least for a remaining part of said delivery route.

In embodiments a series of alternative delivery addresses can be provided to the delivery person and/or the delivery truck, such that the delivery person can chose one of these addresses, for example an address fitting his route best, or can try one or several of these addresses for making the delivery.

If a delivery of an item is made to an alternative delivery address, it is preferred that signal is sent to the addressee informing him of the delivery and the address at which it has been delivered. In embodiments alternative delivery addresses may be retrieved from a social network of which the addressee is a member.

The invention is by no means limited to the embodiments as shown and/or described in this description. Many variations thereof are possible within the scope of the claims, including at least all combinations of parts and elements of the embodiments and parts thereof shown, in any combination or permutation.
These and other alterations and modifications are supposed to be disclosed within the scope of the claims.
Conclusies

1. Bezorgsysteem, omvattende een database voorzien van data gerelateerd aan tenminste één uit te voeren bezorging en tenminste één bestemd bezorgadres voor een geadresseerde voor de bezorging, en tenminste één bezorgingsvoertuig, waarbij het bezorgingsvoertuig en/of een bezorger gekoppeld aan het voertuig is voorzien van een eerste communicatiesysteem en de tenminste ene geadresseerde is voorzien van een tweede communicatiesysteem, waarbij het bezorgsysteem voorts een computersysteem omvat voor het verstrekken van data van de database aan het eerste communicatiesysteem gevormd door of met inbegrip van data over de tenminste ene bezorging en het genoemde bezorgadres, waarbij het bezorgsysteem voorts een proximiteditdetectiesysteem omvat dat ontworpen is voor het detecteren van proximititeit van het bezorgingsvoertuig en/of bezorger tot het bezorgadres; en

- waarbij het tweede communicatiesysteem is ontworpen voor communicatie met het eerste communicatiesysteem voor het verstrekken van een alternatief bezorgadres voor de bezorging, in het bijzonder tijdens bezorging van het item en/of

- waarbij het computersysteem is ontworpen voor het verstrekken van tenminste één alternatief bezorgadres tijdens bezorging, waarbij het alternatieve bezorgadres wordt verstrekt door de database.

2. Bezorgsysteem volgens conclusie 1, waarbij het proximiteditdetectiesysteem omvat tenminste één van:

- tenminste één baken bij het bezorgadres, voor het draadloos communiceren met het eerste communicatiesysteem wanneer een deel van het eerste communicatiesysteem binnen een draadloos communicatie bereik is van het tenminste ene baken;
- een GPS type module voorzien in of voor het eerste communicatiesysteem voor het detecteren van de locatie van het bezorgingsvoertuig en/of bezorger ten opzichte van het bezorgadres; en
- een visueel detectiesysteem ontworpen voor het opnemen van de omgeving van een bezorgingsvoertuig en/of bezorger en het vergelijken van een genomen afbeelding met een beeldweergave voor het bezorgadres.

3. Bezorgsysteem volgens conclusie 1 of 2, waarbij het proximititeitdetectiesysteem is voorzien van een module die een visueel en/of audittief signaal presenteert op het eerste communicatiesysteem wanneer het proximititeitdetectiesysteem proximititeit van het bezorgingsvoertuig en/of bezorger detecteert.

4. Bezorgsysteem volgens conclusie 3, waarbij het signaal een voorstelling van een virtuele deurbel omvat.

5. Bezorgsysteem volgens één der voorgaande conclusies, waarbij het computersysteem is geprogrammeerd om het tenminste ene alternatieve adres naar het eerste communicatiesysteem te verstrekken wanneer een niet-beschikbaar signaal van het tweede communicatiesysteem wordt verstrekt.

6. Bezorgsysteem volgens één der voorgaande conclusies, waarbij het bezorgsysteem toelaat dat het tweede communicatiesysteem een omlaidsignaal verstrekt om tenminste één alternatieve adres voor bezorging aan te wijzen, naar het eerste communicatiesysteem.

7. Bezorgsysteem volgens conclusie 5 of 6, waarbij het bezorgingsvoertuig een volgapparaat omvat voor het bepalen van de positie van het bezorgingsvoertuig ten opzichte van het bestemde adres voor bezorging, waarbij een nadering signaal wordt verstrekt aan de geadresseerde en/of het tweede communicatiesysteem wanneer het voertuig
een vooraf bepaald bereik ten opzichte van het bestemde adres binnentreedt.

8. Bezorgsysteem volgens één der voorgaande conclusies, waarbij het tweede communicatiesysteem omvat tenminste één van:

- een draagbaarcommunicatieapparaat, zoals een smartphone of tablet; en
- een stationair communicatieapparaat.


10. Bezorgsysteem volgens conclusie 8 of 9, waarbij het stationaire apparaat verbonden is aan een deurbelsysteem of een deurbelsysteem omvat.

11. Bezorgsysteem volgens één der voorgaande conclusies, waarbij het tweede communicatiesysteem een draagbaarcommunicatieapparaat omvat en het eerste communicatiesysteem en/of het proximiteitdetectiesysteem een signaaltoestel omvat voor het verstrekken van een signaal aan het draagbaarcommunicatieapparaat, en waarbij het bezorgsysteem zodanig is ontworpen dat:

- tenminste één alternatief bezorgadres en/of andere informatie kan worden verzonden van het draagbaarcommunicatieapparaat naar het eerste communicatiesysteem en/of een stationair apparaat dat is voorzien op het bezorgadres, om te worden gepresenteerd aan de bezoeker op een scherm

20 daarvan en/of

- tenminste één alternatief bezorgadres wordt gepresenteerd op het scherm en/of het eerste communicatiesysteem, waarbij tenminste één
alternatief bezorgadres wordt ontleend aan de database of in het tweede communicatiesysteem is ingevoerd.

12. Bezorgsysteem volgens één der voorgaande conclusies, waarbij aan een uit te voeren bezorging een bezorgcode is geassocieerd, waarbij de bezorgcode is geassocieerd met tenminste een communicatiemiddel voor communicatie tussen het eerste en tweede communicatiesysteem, zodanig dat bij activatie van de bezorgcode, bij voorkeur door de bezorger, een communicatie tussen het eerste en tweede communicatiesysteem tot stand wordt gebracht.


14. Bezorgsysteem volgens één der voorgaande conclusies, waarbij het computersysteem is ontworpen om een bezorgroute voor het bezorgingsvoertuig te berekenen en om een route opnieuw te berekenen gebaseerd op onder andere een alternatief bezorgadres verstrekt voor een bezorging gedurende bezorging.

15. Werkwijze voor bezorging van tenminste één item aan tenminste één bezorgadres van een geadresseerde van het item,
- waarbij een bestemd bezorgadres voor een item in een eerste communicatiesysteem wordt ingevoerd beschikbaar voor een bezorger; en
- waarbij tijdens bezorging van een item proximiteit van een bezorger en/of bezorgingsvoertuig geassocieerd aan de bezorger tot het bestemde bezorgadres wordt gedetecteerd, waarbij een proximiteit signaal wordt verstrekt aan het eerste communicatiemiddel en/of een tweede communicatiemiddel gehouden door de geadresseerde of een persoon
geassocieerd aan de geadresseerde wanneer de proximititeit binnen een vooraf bepaald bereik is, zodanig dat een communicatie tussen de eerste en tweede communicatiemiddel tot stand kan worden gebracht.

16. Werkwijze volgens conclusie 15, waarbij de proximititeit draadloos wordt gedetecteerd door middel van tenminste één van:
- tenminste één baken bij het bezorgadres, dat draadloos communiceert met het eerste communicatiesysteem wanneer een deel van het eerste communicatiesysteem in een draadloos communicatiebereik van het tenminste ene baken wordt gebracht;
- een GPS type module voorzien in of voor het eerste communicatiesysteem voor het detecteren van de locatie van het bezorgingsvoertuig en/of de bezoeker ten opzichte van het bezorgadres; en
- een visueel detectiesysteem ontworpen voor het opnemen van de omgeving van een bezorgingsvoertuig en/of bezoeker en het vergelijken van een genomen afbeelding met een beeldweergave voor het bezorgadres.

17. Werkwijze volgens conclusie 15 of 16, waarbij tenminste één link wordt gepresenteerd op het eerste communicatie middel wanneer proximititeit binnen het vooraf bepaalde bereik wordt gedetecteerd, waardoor de bezoeker een communicatie met tweede communicatiemiddel tot stand kan brengen door activatie van de link.

18. Werkwijze volgens één der conclusies 15-17, waarbij tenminste één alternatief bezorgadres voor het item wordt verstrekt aan de bezoeker, voorafgaand aan of tijdens bezorging van het item, waarbij het alternatief bezorgadres wordt verstrekt:
- via het tweede communicatiesysteem aan de bezoeker en/of
- via een computersysteem naar het eerste communicatiesysteem en/of naar het tweede communicatiesysteem, waarbij het alternatief bezorgadres
wordt verstrekt vanuit een database die gekoppeld is aan het computersysteem.

19. Werkwijze volgens conclusie 18, waarbij tijdens bezorging een naderingssignaal wordt gecommuniceerd naar de geadresseerde, in het bijzonder naar het tweede communicatiesysteem, wanneer de bezorger een vooraf bepaald bereik ten opzichte van het primaire bezorgadres binnentreedt, waarbij het naderingssignaal de verstrekking van het alternatieve bezorgadres naar de bezorger teweegbrengt, in het bijzonder wanneer de geadresseerde een niet-beschikbaar signaal in een computersysteem geassocieerd met tenminste het eerste communicatiemiddel heeft ingevoerd.

20. Werkwijze volgens één der conclusies 15-19, waarbij bij of nabij het bezorgadres tenminste één alternatief bezorgadres wordt gepresenteerd aan de bezorger met een presentatieapparaat dat deel uitmaakt van het eerste en/of tweede communicatiesysteem, bij voorkeur op een scherm, in het bijzonder na signalering van de bezorger's aanwezigheid bij of nabij het bezorgadres, bijvoorbeeld door aanbellen aan een deurbel of gebaseerd op het proximiteitssignaal.

21. Werkwijze volgens conclusie 20, waarbij het tenminste ene alternatieve bezorgadres wordt gepresenteerd aan de bezorger, waarbij:
   - de geadresseerde voorafgaand aan de bezorging een doorstuursignaal in de computer instelt, welk doorstuursignaal de presentatie van het tenminste ene vooraf bepaalde alternatieve bezorgadres initieert; en/of
   - bij ontvangst van het proximiteitsignaal of na het initiëren van communicatie tussen het eerste en tweede communicatie middel, waarna het tenministe ene alternatieve bezorgadres wordt gepresenteerd aan de bezorger, via het scherm.
22. Werkwijze volgens één der conclusies 18-21, waarbij het tenminste ene alternatief bezorgadres wordt gepresenteerd aan de bezorger bij of nabij het bestemde bezorgadres, waarbij de geadresseerde of het computersysteem het tenminste ene vooraf bepaalde bezorgadres voorafgaand aan de bezorging instelt.

23. Werkwijze volgens één der conclusies 18-22, waarbij een serie van alternatieve bezorgadressen is ingesteld, waarbij de bezorger één van deze alternatieve bezorgadressen kiest voor bezorging van het item.

24. Werkwijze volgens één der conclusies 18-23, waarbij een bezorgroute van de bezorger tijdens het volgen van de bezorgroute wordt aangepast, gebaseerd op verandering van het primaire bezorgadres naar een alternatief bezorgadres.

25. Deurbelsysteem, omvattende tenminste een deurbel, een deurbelcontrolesysteem en een elektronisch scherm, waarbij het deurbelcontrolesysteem omvat:
   - een geheugen voor het bevatten van adresinformatie en een interface voor het presenteren van tenminste één adres op het scherm verkregen van het geheugen en/of
   - een invoerapparaat voor het ontvangen van tenminste één adres van buiten het deurbelsysteem en een interface voor presentatie van het adres op het scherm, waarbij de deurbel is gekoppeld aan het deurbelcontrolesysteem voor activatie van de interface voor presentatie van de informatie op het scherm; en/of
   - waarbij het deurbelsysteem een communicatie-inrichting omvat voor het communiceren met een mobielapparaat, zoals een smartphone of een laptop, bij voorkeur geschikt voor twee richting communicatie.

26. Deurbelsysteem volgens conclusie 25, waarbij de deurbel een virtuele deurbel is, bijvoorbeeld afgebeeld op een mobielapparaat van een bezorger.
27. Deurbelsysteem volgens conclusie 25 of 26, waarbij het systeem voorts een camera omvat.

28. Set omvattende tenminste een baken en een mobielapparaat, waarbij het baken en het mobielapparaat zijn ingesteld voor draadloos communicatie met elkaar binnen een vooraf bepaald bereik, waarbij het mobielapparaat software omvat die kan worden geïnitieerd door een draadloos signaal ontvangen van het baken om een link te verstrekken op het mobielapparaat, waarbij de link is ontworpen om communicatie tussen het mobielapparaat en tenminste één vooraf bepaald tweede mobielapparaat tot stand te brengen.
Title: Delivery system and method and door bell system

Abstract

Delivery system, comprising a database comprising data relating to at least one delivery to be made and at least one intended delivery address for an addressee for said delivery, and at least one delivery vehicle, wherein the delivery vehicle and/or a delivery person designated to said vehicle is provided with a first communication system and the at least one addressee is provided with a second communication system, the delivery system further comprising a computer system for providing data from the database to the first communication system formed by or including data about the at least one delivery and said delivery address, wherein the delivery system further comprises a proximity detection system designed for detecting proximity of the delivery vehicle and/or the delivery person to the delivery address; and
- wherein the second communication system is designed for communicating with the first communication system for providing an alternative delivery address for the delivery, especially during the delivery of said item and/or
- wherein the computer system is designed for providing at least one alternative delivery address during delivery, said alternative delivery address provided from the database.
<table>
<thead>
<tr>
<th>IDENTIFICATIE VAN DE NATIONALE AANVRAGE</th>
<th>KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE</th>
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Aanvrager (Naam)

MT Investments B.V.

Datum van het verzoek voor een onderzoek van internationaal type

<table>
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<tr>
<th>Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr.</th>
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<tr>
<td>08-11-2014</td>
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I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)

Volgens de internationale classificatie (IPC)

| G06Q10/08 | G06Q50/32 |

II. ONDERZochte gebieden van de techniek

Onderzochte minimumdocumentatie

Classificatiesysteem | Classificatiesymbolen
<table>
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Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

III. GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)

IV. GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)

Form PCT/ISA 201 A (11/2000)
### ONDERZOEKRAPPORT BETREFFENDE HET RESULTAAT VAN HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK VAN HET INTERNATIONAAL TYPE

**A. CLASSIFICATIE VAN HET ONDERWERP**
INV. G06Q10/08 G06Q50/32
ADD.

Volgens de Internationale Classificatie van oordelen (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

**B. ONDERZOCHTE GEBIEDEN VAN DE TECHNIEK**

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)
G06Q

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefferwoorden)
EPO-Internal, WPI Data

### C. VAN BELANG GEACHTE DOCUMENTEN

<table>
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<tr>
<th>Categorie</th>
<th>Geïsoleerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages</th>
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<td>* samenvatting * &lt;br&gt; * figuren 2,4,5 * &lt;br&gt; * alinea [0017] - [0021] *</td>
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<td>* samenvatting * &lt;br&gt; * figuren 1-3 * &lt;br&gt; * alinea [0002], [0020], [0021], [0025] - [0032], [0037] - [0039], [0047], [0048] *</td>
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**X** Verdere documenten worden vermeld in het vervolg van vak C.  **X** Leden van dezelfde oortoefamille zijn vermeld in een bijlage

**T** Speciale categorieën van aangehaalde documenten  
**T** Specialie categorieën van aangehaalde documenten

**A** niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft  
**X** na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwaarlijk is voor de oortoefanvrage, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

**D** in de oortoefanvrage vermeld  
**X** de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

**E** eerdere oortoefanvrage, gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt besproken  
**Y** de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geïsoleerde literatuur van dezelfde categorie, waarbij de combinatie voor de valman voor de hand liggend wordt geacht

**L** om andere redenen vermelden literatuur  
**B** lid van dezelfde oortoefamfamille of overeenkomstige oortoepublicatie

**O** niet-schriftelijke stand van de techniek  

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

**P** tussen de voorrangsdatum en de indieningsdatum gepubliceerd literatuur

6 februari 2015

Naam en adres van de instantie
European Patent Office, P.B. 5818 Patentiaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Fax. (+31-70) 340-3016

De voegevóêe ambiëenra
Gabriel, Christiaan

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Formulier PCT/ISA/201 (tweede blad) (Januari 2004)
<table>
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<td>EP 0 995 973 A2 (NOKIA MOBILE PHONES LTD [FI] NOKIA CORP [FI]) 26 april 2000 (2000-04-26) * samenvatting * * figuren 5b,10 * * alineas [0044], [0050] *</td>
<td>15</td>
</tr>
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</table>
De instantie belast met het uitvoeren van het onderzoek naar de stand van de techniek heeft vastgesteld dat deze aanvraag meerdere uitvindingen bevat, te weten:

1. conclusies: 1-24, 28

   Methods and systems for enabling a communication between two apparatuses based on proximity of one of the two apparatuses and a postal delivery address.

   ---

2. conclusies: 25-27

   Doorbell system having a plurality of communication options.

---

Het vooroordeelzoek werd tot het eerste onderwerp beperkt.

1. The subject-matter of claims 15 and 25 is not unitary, for the following reasons:
   1.1 The subject-matter of claim 15 defines a method for enabling a communication between two apparatuses based on proximity of one of the two apparatuses and a postal delivery address.
   1.2 The subject-matter of claim 25 defines a doorbell system with doorbell, controller and electronic screen and optionally a wireless communication system, capable of presenting address information.
   1.3 Hence, the subject-matter of claims 15 and 25 is directed at different technical concepts.
   1.4 The subject-matter of claim 15 has no technical features in common with subject-matter of claim 25.
   1.5 For the above reasons, the subject-matter of claims 15 and 25 is not unitary.

2. The following groups of invention have therefore been defined:
   2.1 Claims 1-24 and 28: Methods and systems for enabling a communication between two apparatuses based on proximity of one of the two apparatuses and a postal delivery address.
   2.2 Claims 25-27: Doorbell system having a plurality of communication options;
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<td>US 2002047787 A1</td>
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WRITTEN OPINION

File No. SN63038          Filing date (day/month/year) 28.05.2014          Priority date (day/month/year)          Application No. NL2012919

International Patent Classification (IPC) INV. G06Q10/08 G06Q50/32

Applicant MT Investments B.V.

This opinion contains indications relating to the following items:

☑ Box No. I Basis of the opinion
☐ Box No. II Priority
☑ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☑ Box No. IV Lack of unity of invention
☑ Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐ Box No. VI Certain documents cited
☐ Box No. VII Certain defects in the application
☐ Box No. VIII Certain observations on the application

Examiner

Gabriel, Christiaan

Form NL237A (Dekblad) (July 2006)
Box No. I  Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.

2. With regard to any nucleotide and/or amino acid sequence disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
   a. type of material:
      - [ ] a sequence listing
      - [ ] table(s) related to the sequence listing
   b. format of material:
      - [ ] on paper
      - [ ] in electronic form
   c. time of filing/furnishing:
      - [ ] contained in the application as filed.
      - [ ] filed together with the application in electronic form.
      - [ ] furnished subsequently for the purposes of search.

3. [ ] In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:
Box No. III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step, or to be industrially applicable have not been examined in respect of

☐ the entire application
☒ claims Nos. 25-27

because:

☐ the said application, or the said claims Nos. relate to the following subject matter which does not require a search (specify):

☐ the description, claims or drawings (indicate particular elements below) or said claims Nos. are so unclear that no meaningful opinion could be formed (specify):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (specify):

☒ no search report has been established for the whole application or for said claims Nos. 25-27

☐ a meaningful opinion could not be formed as the sequence listing was either not available, or was not furnished in the international format (WIPO ST25).

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; or such tables were not available in electronic form.

☐ See Supplemental Box for further details.

Box No. IV  Lack of unity of invention

1. The requirement of unity of invention is not complied with for the following reasons:

see separate sheet

2. This report has been established in respect of the following parts of the application:

☐ all parts.
☒ the parts relating to claims Nos. (see Search Report)
# Box No. V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

<table>
<thead>
<tr>
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<tr>
<td><strong>Industrial applicability</strong></td>
<td>1-24, 28</td>
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</tr>
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</table>

2. Citations and explanations

*see separate sheet*
item iv

1 The subject-matter of claims 15 and 25 is not unitary, for the following reasons:

1.1 The subject-matter of claim 15 defines a method for enabling a communication between two apparatuses based on proximity of one of the two apparatuses and a postal delivery address.

1.2 The subject-matter of claim 25 defines a doorbell system with doorbell, controller and electronic screen and optionally a wireless communication system, capable of presenting address information.

1.3 Hence, the subject-matter of claims 15 and 25 is directed at different technical concepts.

1.4 The subject-matter of claim 15 has no technical features in common with subject-matter of claim 25.

1.5 For the above reasons, the subject-matter of claims 15 and 25 is not unitary.

2 The following groups of invention have therefore been defined:

2.1 Claims 1-24 and 28: Methods and systems for for enabling a communication between two apparatuses based on proximity of one of the two apparatuses and a postal delivery address.

2.2 Claims 25-27: Doorbell system having a plurality of communication options;

item v

1 Reference is made to the following documents:


2 D1 discloses:

"Bezorgsysteem, omvattende een database voorzien van data gerelateerd aan tenminste één uit te voeren bezorging en tenminste één bestemd bezorgadres voor een geadresseerde voor de bezorging (14 in fig. 4, 5), en tenminste één bezorgingsvoertuig ("Load Delivery Truck" in step 100 of fig. 2), waarbij het bezorgingsvoertuig en/of een bezorger gekoppeld aan het voertuig
is voorzien van een eerste communicatiesysteem ('data receiving apparatus' in par. 19) en de tenminste ene geadresseerde is voorzien van een tweede communicatiesysteem (e.g. a computer system required to fill in the online form in par. 21), waarbij het bezorgsysteem voorts een computersysteem omvat voor het verstrekken van data van de database aan het eerste communicatiesysteem gevormd door of met inbegrip van data over de tenminste ene bezorging en het genoemde bezorgadres ('manifest' in step 100 of fig. 2 and par. 20; "optimized delivery route" in par. 20), waarbij het bezorgsysteem voorts een proximiteitdetectiesysteem omvat dat ontworpen is voor het detecteren van proximititeit van het bezorgingsvoertuig en/of bezorger tot het bezorgadres ('GPS'; "select time prior to arrival" in par. 20); en

(- waarbij het tweede communicatiesysteem is ontworpen voor communicatie met het eerste communicatiesysteem voor het verstrekken van een alternatief bezorgadres voor de bezorging (par. 21), in het bijzonder tijdens bezorging van het item en/of)

- waarbij het computersysteem is ontworpen voor het verstrekken van tenminste één alternatief bezorgadres tijdens bezorging, waarbij het alternatieve bezorgadres wordt verstrekken door de database ('reroute' in step 122 of fig. 2 and par. 20; "Route Re-Optimisation" in fig. 5)."

2.1 Hence, the subject-matter of claim 1 lacks novelty.

2.2 For similar reasons, the subject-matter of claim 15 lacks novelty.

2.3 Concerning the option in claim 1, that "het tweede communicatiesysteem is ontworpen voor communicatie met het eerste communicatiesysteem voor het verstrekken van een alternatief bezorgadres voor de bezorging, in het bijzonder tijdens bezorging van het item", it would not involve an inventive step to add an option to the system of D1 to enable communication between the delivery driver and the customer when the driver is nearby.

2.4 The subject-matter of independent claim 28 additionally specifies that the detection of proximity is carried out using a beacon. Using such a beacon in the system of D1 for enabling communication with a driver of a delivery truck, is obvious on the basis of the disclosure of D2 (in particular, par 48). Based on the combination of D1 and D2, the subject-matter of none of the dependent claims 2-14 or 16-24 involves an inventive step.

2.5 For reasons of completeness, it is noted that D3 (abstract; fig. 5b, 10; par. 44 or 50) discloses a navigation system which shows a nearby Point Of Interest (POI) and gives the opportunity to make a telephone call to the POI. There
appear to be no technical differences between the subject-matter of claim 15 and D3, as the claim comprises no technical features relating to the actual delivery of an item, but only discloses technical features for establishing a communication based on proximity, so that technical novelty is lacking for the subject-matter of claim 15 in respect of D3.