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(54) **screening device for screening a person**

(57) A screening device for screening a person, the screening device comprises a cabin comprising a wall at least partly enclosing an inner space, a sensor on at least part of the surface of the wall facing the inner space, the sensor being configured to sense the person present in the inner space. The screening device further comprises a projector projecting an image into the inner space to be viewed by the person, and a control device connected to the sensor and the projector and configured to operate the sensor to sense the person residing in the inner space, and drive the protector to project instructions to the person, associated with the operating of the sensor.
The screening system may further comprise a hand luggage screening device.

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Title: screening device for screening a person

The present invention relates to a screening device for screening a person.

Screening persons may be performed for security reasons. The screening of the persons may for example check if a person carries with him or her any items that may evoke danger, such as a knife, scissor or other metal object, an arm such as a fire arm, an explosive, etc.
Screening persons may be performed at a variety of locations, for example at an entrance of a building, theatre, at a railway station, an airport, etc.
The screening may involve plural persons that are to be screened. Delays and waiting ques may be avoided on the one hand, while available resources (screening security personnel, screening apparatuses, square meters of building floor space, etc.) may be required to be minimized on the other hand. Moreover, a risk of erroneous screening outcomes is to be minimized.
When screening a person, traditionally, use has been made of metal detection portals. More recent developments employ radio wave scanners, such as millimetre wave scanners or terahertz scanners to scan the person for objects that may be associated with a security risk.
With these types of scanners, the person is required to enter a cabin that is at least partly surrounded by a wall. The cabin may e.g. be closed by a door or slide so as to prevent the passenger from walking through before being cleared. In case the scanning process identifies a risk, e.g. an item carried by the person, or a malfunction of part of the scan, an alarm is generated that needs to be resolved and delays may occur.

The invention aims to avoid or reduce delays in the screening of the person.

According to an aspect of the invention, there is provided a screening device for screening a person, the screening device comprising:

- a cabin comprising a wall at least partly enclosing an inner space,
- a sensor on at least part of the surface of the wall facing the inner space, the sensor being configured to sense the person present in the inner space,
-
- a projector projecting an image into the inner space to be viewed by the person, and

- a control device connected to the sensor and the projector and configured to:
  operate the sensor to sense the person residing in the inner space;
  drive the protector to project instructions to the person, associated with the operating of the sensor.

The wall enclosing the inner space may form a cabin in which the person is to be screened. The cabin may be provided with one or two openings for the person to enter and/or exit the cabin, e.g. an entry opening at an entry side and an exit opening at an exit side, the openings may be closable by a respective door, slide, etc. The sensor on at least part of a surface of the wall facing the inner space may be any type of sensor, e.g. a radio wave scanner such as a millimetre wave scanner, a terahertz scanner, etc. The sensor may be stationary in respect of the wall or may be movable on the surface of the wall, e.g. rotatable around the person to scan the person from circumferential angles.
The projector may project an image into the inner space, the projector may for example be arranged in or at a ceiling of the cabin, e.g. above the space in the cabin where the person is to present him or herself for screening, and may be any type of projector. For example, the projector may project an image onto the wall of the cabin. As another example, the projector may, e.g. in a holographical way, project an image into the space. For example, the projector may comprise a 3D laser projector or other 3D projector to project the image into the space.
The control device may comprise any suitable controller, such as a microcontroller, microprocessor, PLC (programmable logic controller), etc., provided with suitable program instructions to perform the described steps.
The control device drives the sensor to sense the person residing in the inner space. The sensor data provided by the sensor may be processed locally or may be sent to an (e.g. local or remote) sensor data processing device. For example, sensor data formed by radio wave signals may be processed and an image derived therefrom. The image may for example be sent to an evaluation data processing device, which may evaluate the image to identify any risks, such as items (knifes, arms, etc.) carried by the person. The evaluation data processing device may be e.g. be self learning, e.g. comprise a neural network or other intelligent program architecture that establishes if any items may be identified in the image that may invoke a risk. The self learning evaluation data processing device may for example be learned from training data comprising images in which potentially risk full items have been identified by a human

operator. The sensor data processing device, evaluation data processing device may be comprised in the control device or may form separate, e.g. remote devices.
In order to provide that the person adheres to the screening, the control device drives the protector to project instructions to the person, associated with the operating of the sensor. Thereby, the person is provided with instructions what to do, so as to provide that the person adheres to the screening process. For example, the person may be requested to empty his or her pockets, to put items, such as hand luggage, keys, wallet, coat, vest, etc. in a tray. As another example, the person may be requested to stand in a predetermined location in the cabin and/or to adhere to a predetermined position, e.g. to stretch his or her arms upwards. As another example, the person may be informed that the scanning has been completed and may be instructed to leave the cabin.

As a result, delays, such as may be evoked in prior art solutions, may be prevented. In prior art solutions, an operator may present himself at the cabin, the person may be prompted by the operator to step out of the cabin or provide instructions to the person how to proceed. This may result in delay, as the person may first be requested to step out of the cabin, be provided with instructions, or be requested to e.g. remove items from their pockets, etc. and then be instructed to re-enter the cabin for a repeated screening. Compared to the traditional detection portals, this delay may even be larger: for security reasons, it may be avoided that an operator enters the confined space of the cabin where a person to be screened resides, thus requiring the person (which may be mentally focussed on following up written instructions in the cabin, may be stressed, etc.) to pay attention to an operator outside of the cabin, may require to open the door or slide enclosing the cabin, and may require instructing the person to step out of the cabin, etc.

Moreover, as the image is projected into the cabin, i.e. into the inner space of the cabin, placing a display panel in the cabin may be omitted. As a result, interference by such as display panel with the sensor may be avoided. Various causes of interference may be avoided. On the one hand, the display panel itself, forming a physical structure, may obstruct radio waves emitted by the sensor thus obstructing a scanning of the person. On the other hand, the display panel, such as an LCD panel or LED panel, may itself emit radiofrequency signals, e.g. resulting from driving signals in the panel associated with the driving of pixels of the display. Such digital data processing and data communication in the display panel may result in an emission of radio

frequency signals that could interfere with the sensing of the person, in particular in case radio waves are employed for sensing the person.

In an embodiment, the control device is further configured to
- derive a location of an object on the person from the sensor data, and
- control the projector to display the location of the object on the person.
The control device may, when detecting an object in the scan and associated processing, derive a location of the object. The control device may then drive the projector to display the location of the object. The person may then be instructed to remove the object, e.g. put the object in a bin or tray, thereby displaying the location of the object to the person, so as to clarify to the person what the person is expected to do. The object may be any security relevant object, such as a metal object, a weapon, an explosive, a liquid, etc. Furthermore, the object may be any object that the person could have forgotten to remove, such as a wallet, key, smartphone, etc., and which object may e.g. interfere with the scanning. As the location of the object is indicated to the person, the person may be able to remove the object as instructed, without any further live operator intervention.

To visually instruct the person where an object has been localized, an artificial reality mirror image may be generated which displays a mirror image of the person including the object. Thereto, the sensor further comprises a camera directed to a desired position of the person in the inner space, the camera being connected to the control device to transmit camera image data to the control device, and wherein the control device is configured to generate a mirror image of the person from the camera image data, to create a fused image of the person by fusing the object at the derived location into the mirror image of the person and to control the projector to display the fused image of the person. Hence, a mirror image of the person may be presented to the person, in which the object location has been fused. The object may e.g. be indicated by a pictogram displaying a type of object as detected, e.g. a pictogram of a key, wallet, phone, etc., or may be indicated by a shape corresponding to a shape of the object as sensed by the sensor.

In an embodiment, the screening device further comprises the camera configured to generate image data, a gesture sensor sensing a gesture of the person and configured to generate gesture data and a motion sensor recording a movement of the person and configured to generate motion data, wherein the control device is configured to perform a risk assessment

from a combination of the sensor data, the camera image data, the gesture data and the motion data and to generate a warning message based on the risk assessment

As a result, a behaviour of the person, e.g. deviations of common behaviour, may be detected and assessed automatically.

The control device may be configured to perform the risk assessment using a self-learning system, the self learning system having been trained using a training dataset additionally comprising operator assessment responsive to the sensor data, camera image data, gesture data and motion data. Thereby, an experienced operator may train the self learning system.

In an embodiment, the screening device further comprises a footwear sensor on at least part of the surface of a floor of the cabin, the footwear sensor being configured to sense the person's footwear present in the inner space . The footwear sensor may be configured to sense a position of the footwear, a presence of metal, liquid, or any potentially risk invoking item or substance.

In order to provide operator assistance to the person, in an embodiment, the control device is configured to

- establish a connection to an operator console,
- output an instruction to an operator at the operator console to communicate to the person, and
- control the projector to display an image of the operator (e.g. a video image of the operator) at the operator console.

As the operator assistance is provided via the display, the person in the cabin can be provided with (e.g. audio visual) instructions by the operator. The person may communicate with the operator using a camera and microphone comprised in the security device, i.e. in the cabin, therefore being able to communicate with the operator without requiring the person to leave the cabin. On the one hand, the assistance may be available faster, as the operator does not need to walk to the cabin, and on the other hand, the operator may, from the operator console, provide assistance and/r supervise plural security devices, thus potentially enhancing efficiency.

In an embodiment, the control device is configured to

- derive from the sensor data a location of an object on the person,
- transmit the location of the object on the person to the operator console, and

- transmit instructions to the operator console requesting the operator to explain to the person the location of the object.

The operator may hence be assisted to remotely asses a cause of non-compliance, e.g. an object carried by the person. The location of the object is sent to the operator console and displayed at the operator console. The operator can then explain to the person where an object has been found in the scan, and what the person has to do. To assist the remote operator, the control device may transmit to the operator console a video stream showing the entire process from entering the cabin up to the event that triggered the call for the remote operator to assist the person

In order to provide that operator assistance may requested in various circumstances, in an embodiment, the control device is configured to output the instruction to the operator in case a criterion is fulfilled, the criterion comprising at least one of:

- the person initiating an operator contact request (e.g. the person not knowing what to do, getting confused, facing an error message, panicking, etc.,)
- the control device establishing that a pre-set screening time has elapsed (e.g. several attempts have been carried out unsuccessfully),
- the control device establishing that a presence of an object has been established.

In an embodiment, the sensor comprises a radio wave scanner comprising a radio wave antenna array, the radio wave antenna array covering at least part of the surface of the wall behind the projected image. As the projected image may not obstruct the radio wave transmission from the antenna array, blocking or attenuating the radio waves from the antennas behind the projected image may be avoided, thereby enabling to scan the person making use of all antennas and potentially avoiding blind spots in the scan of the person, as “shadow” effects by a display panel interposed between one or more of the antennas and the person, may be avoided.

In an embodiment, the projector is configured to project a two dimensional image on the wall of the cabin or a three dimensional image in the inner space.

In an embodiment, the screening device further comprises an object depositing tray and wherein the instructions comprise instructions to deposit the object in the object depositing tray. The tray may be stationary, to allow the person to reclaim the deposited object after the

scanning, or may be conveyed by a conveyor, for example to a hand luggage screening system, as described in more detail below. In case hand luggage inspection techniques are used that require shielding from the person, such as X-ray inspection, the hand luggage may be conveyed away from the interior of the cabin. Otherwise infrared, video, etc. inspection techniques may be applied onto the hand luggage.

In an embodiment, the screening device further comprises a hand luggage screening apparatus, and a conveyor to convey the hand luggage from the cabin to the hand luggage screening apparatus, the control device being configured to drive the conveyor to convey the hand luggage deposited in the object depositing tray to the hand luggage screening apparatus, to drive the hand luggage screening apparatus to screen the hand luggage, and drive the conveyor to convey the hand luggage back into the cabin.

In an embodiment, the screening device further comprises an identification device, the control device being configured to identify the person using identification data from the identification device, and associate the depositing tray to the identified person. Hence, in case the tray holding the object is conveyed away by the conveyor, the association of the tray to the person may enable to convey the tray to a reclaiming station where the corresponding person has identified himself/herself. The identification device may comprise a camera, a passport scanner, a boarding pass scanner, etc. The identification may be performed using e.g. biometric data, such as an image of a face or iris of the person

In an embodiment, the control device is configured to drive the display device to provide instructions to the person to adhere to a predetermined screening sequence. Thereby, an efficient screening may be performed, even with persons that are not familiar with the procedure yet. The screening process may for example comprise the steps of the person identifying himself or herself at an identification station, the person removing a coat or jacket, the person placing coat, jacket in a tray, the person emptying his/her pockets and depositing the items in the tray, the person taking a predetermined position (e.g. marked on the floor or displayed by the projector), the person reaching with his/her arms upward, the person being scanned by the sensor, the person being informed (e.g. by a message displayed by the projector) that the scan has succeeded, the person being prompted to leave the cabin, etc.

The sensor may further comprises a camera, the control device is configured to process an image form the camera to derive a progress of the screening of the person therefrom, to compare the derived progress of the screening to the predetermined screening sequence, and to derive the instructions provided to the person from the comparison of the derived progress to the predetermine screening sequence. Image processing and a self-learning system may be employed to assess progress. He self-learning system may initially be trained using images (such as video or still images) and associated operator input.

In an embodiment, the screening device further comprising:
a first identification station configured to request a person to present a token,
a hand luggage depositing station configured to collect hand luggage deposited by the person,
the first identification station being associated with the hand luggage depositing station,
a hand luggage screening system configured to screen the hand luggage,
a hand luggage reclaiming station, downstream of the hand luggage screening system, configured to reclaim the hand luggage deposited by the person,
a second identification station being associated with the hand luggage reclaiming station,
the screening device forming a passage for the person from the hand luggage depositing station to the hand luggage reclaiming station, and
a hand luggage conveying system configured to convey the hand luggage from the hand luggage depositing station via the hand luggage screening apparatus to the hand luggage reclaiming station,
the control device further being configured to:
read the token presented by the person at the first identification station;
associate the presented token to the hand luggage deposited by the person at the hand luggage depositing station;
upon the person having been screened by the screening device, read the token presented by the person at the second identification station at the reclaiming station,
control the hand luggage conveying system to convey the hand luggage associated with the token to the hand luggage reclaiming station.

The first identification station may request any suitable token, such as a passport, driving license or other identification document, a boarding pass, airline ticket, etc. In an embodiment, the token comprises biometric data, such as facial recognition or iris scan.

The hand luggage depositing station collects hand luggage deposited by the person, the first identification station being associated with the hand luggage depositing station so as to associate the hand luggage as deposited to the person. The hand luggage may for example be deposited in a tray provided with an identification, such as an RF identification or radio frequency identification, to associate the tray carrying the hand luggage to the person.
The hand luggage may then be conveyed to the hand luggage screening system to screen the hand luggage,
The person then proceeds to the screening device as disclosed in the present document.
A hand luggage reclaiming station is provided downstream of the hand luggage screening system, to enable the person reclaim the hand luggage deposited by the person.
In order to identify which hand luggage, i.e. which tray to return to the person, a second identification station is provided and being associated with the hand luggage reclaiming station.
As the screening device forms a passage for the person from the hand luggage depositing station to the hand luggage reclaiming station, the person can only reach the reclaiming station once having been screened by the screening device.
The hand luggage conveying system conveys the hand luggage from the hand luggage depositing station via the hand luggage screening apparatus to the hand luggage reclaiming station, and after the person having been screened by the screening device, the person may identify as the second identification station causing the hand luggage conveying system to convey the hand luggage associated with the token to the hand luggage reclaiming station for reclaiming by the person.
The first and second identification devices, the hand luggage depositing station, hand luggage screening system, hand luggage conveying system and the hand luggage reclaiming station may be arranged outside of the cabin of the screening device.

In an embodiment, the screening device comprises
plural hand luggage reclaiming stations, and
wherein the security system control device is configured to designate one of the plural hand luggage reclaiming stations to the token, to control the hand luggage conveying system to convey the hand luggage associated with the token to the designated one of the plural hand luggage reclaiming stations and to output instructions to the person having passed the screening device and presenting the token to collect the hand luggage associated with the token at the designated one of the plural hand luggage reclaiming stations.

The screening device may further comprise plural hand luggage depositing stations and associated first identification stations, to further increase a throughput. The person may hence be directed to an available, free depositing station and associated first identification station, then proceed to be screened by the screening device, following which the person may recollect the hand luggage at one of the reclaiming stations. In an embodiment, the person proceeds to a free reclaiming station on his/her own initiative, and identifies, following which the corresponding hand luggage is conveyed to the reclaiming station. Alternatively, the person may be instructed, e.g. on a display, to which one of the reclaiming stations to proceed. When using plural reclaiming stations and optionally plural depositing stations, the cabin of the person screening device(s) and the hand luggage screening apparatus(es) may be used at an optimum efficiency, there enabling to reach a maximum flow of persons and hand luggage per cabin of the screening device respectively per hand luggage screening apparatus.

In an embodiment, the screening device further comprises the object depositing tray and wherein the control device is configured to control the hand luggage conveying system to convey the object deposited in the object depositing tray to the designated one of the plural hand luggage reclaiming stations. Accordingly, the screening device may further comprise an identification device to scan the token. The depositing tray may then be associated to the identified person. Hence, in case the tray holding the object is conveyed away by the conveyor, the association of the tray to the person may enable to convey the tray to a reclaiming station where the corresponding person has identified himself/herself.

According to another aspect of the invention, there is provided a screening device comprising a hand luggage depositing station, a hand luggage reclaiming station, a first hand luggage screening apparatus, a second hand luggage screening apparatus and the hand luggage conveying system to convey the hand luggage from the hand luggage depositing station to either one of the first and the second hand luggage screening apparatuses and from to either one of the first and the second hand luggage screening apparatuses to the hand luggage reclaiming station, wherein the conveying system comprises a shielded hand luggage conveying path extending between the first and second hand luggage screening apparatuses, wherein the hand luggage depositing station loads into the shielded hand luggage conveying path via a loading port having a conveying direction perpendicular to a loading conveying direction between the first and second hand luggage screening apparatuses, wherein the shielded hand luggage conveying path discharges to the hand luggage reclaiming station via a

discharging port having a discharging conveying direction perpendicular to a conveying direction between the first and second hand luggage screening apparatuses and wherein radiation shields configured to shield radiation generated by the first and second hand luggage screening apparatuses are arranged at the loading port and at the discharging port.

The hand luggage screening apparatuses may inspect the luggage using X-ray radiation. For safety, the X-ray radiation is to be shielded from persons. Shielding flaps are used both at an entry and an exit of the hand luggage screening apparatus. In order to provide shielding, even when a following tray is conveyed into the hand luggage screening apparatus, resp. a previous tray Is conveyed out of the hand luggage screening apparatus, plural shielding flaps are used, e.g. 3 flaps at each opening. As the trays that carry the hand luggage are to pass the shielding flaps, items of hand luggage may be swiped out of the tray by the flaps. Furthermore, the flaps may cause a tray to be held back, e.g. in case the tray is loaded with low weight hand luggage or in case a voluminous item in the tray is held back by the flaps.

The shielded conveying path between the hand luggage screening apparatuses may enable to omit the shielding flaps at the hand luggage screening apparatuses, hence may thereby mitigate the problems associated with the prior art flaps. In order to prevent any remaining leakage of radiation at the loading port or discharging port, radiation shields, such as lead curtains, may be provided at the ports.

The screening device according to the present aspect may be comprised in the screening device as described above, however may also be provided as such.

The radiation shields may be lead curtains and shielding flaps at the first and second hand luggage screening apparatuses may be omitted.

To provide further shielding at the loading and discharging ports, the loading port comprises a loading port shield extending along the loading direction and wherein the discharging port comprise a discharging port shield extending along the discharging direction.

To provide load balancing of the screening devices, i.e. to distribute the trays in a balanced way over the first and second screening apparatuses, the first and second hand luggage screening apparatuses may be bi-directional and the shielded hand luggage conveying path may bi-directional, so that the hand luggage may be offered to either one of the screening devices.

It is noted that in the present document, the terms scanning, screening, sensing may refer to the same and may hence be interchangeable. Similarly, the terms person and passenger may

both refer to a person and may hence be interchangeable in case the person is a passenger. Likewise, the terms object, item, etc. may refer to the same and may hence be interchangeable.

Further features, advantages and effects of the present disclosure may become clear from the appended drawing and corresponding description, showing a non-limiting embodiment, wherein:

Figure 1 depicts a perspective view of a screening device;

Figure 2 depicts another view of the screening device

Figure 3 depicts a detailed view of a hand luggage tray of the screening device;

Figure 4A and 4B depict perspective views of an interior of the screening device;

Figure 5A and 5B depict a perspective view of the interior of the screening device while screening a person;

Figure 6 depicts a highly schematic top view of a passenger and hand luggage screening system;

Figures 7A – 7C depict top view of screening device;

Figure 8A and 8B depict perspective views of an arrangement of screening devices; and

Figure 9 depicts a side view of a hand luggage screening system.

It is noted that throughout the figures, the same or similar reference numerals may be employed, referring to the same or similar features.

Background

Self-service has become a normal feature of more and more activities in our daily lives and nowhere is the trend toward self-service more evident than in travel. Today, travellers research and plan their own vacations, book their own flights, hotels, transport, restaurants and activities. When they arrive to an airport, they can tag their own checked luggage and print out boarding passes.

Likewise, airport security screening can be made more passenger-centric to allow travellers to manage their journey through the checkpoint. There is also a strong business case driving the use of self-service solutions and extending self-service to security screening for governmental, airport and air carrier stakeholders to drive productivity. These efficiencies in capital investment and reduced staffing requirements achieved from passenger risk segmentation and risk based dynamic screening, increase flexibility for airports' checkpoint design options, automation of

detection and alarm resolution capabilities and the integration of new and advanced technology.

Hence, the present development aims at an efficient design of a self-service passenger security environment satisfy the stringent screening requirements; ensuring security outcomes, while delivering a positive, passenger centred experience for large volumes of diverse, multi-lingual and multi-cultural travellers.

Figure 1 depicts a perspective view of the screening device SD (also denoted as Passenger Self Screening device). The screening device comprising a cabin CA enclosed by a wall WA forming an interior space INT in which a person PER has entered through a door, in the present case a sliding door SD.

Technical Concept

The proposed concept may combine intuitive man-machine interfaces, passenger data and advanced technology physical screening to create a concept that can be applicable to all passenger types and threat levels.

A process of screening will be described in the below:

1. Passenger Arrival:

Passenger arrives at the checkpoint with carry-on baggage. Interactive signage directs passenger to an available passenger self screening device SD. The passenger presents identification credentials (e.g. a token, such as a passport, boarding pass, facial image or other biometric information) to a reader (identification). The reader verifies the passenger's identity and assigns passenger risk score from Secure Flight data and other relevant sources. Once identity and flight information are authenticated, the reader/user interface indicates to passenger that they are cleared for screening and the entry door of the cabin of the passenger self screening device opens.

Passenger self screening device design and access control

- Single point passenger self-service screening device,
- Modular design that can be incorporated into groups of passenger self screening devices
- Occupies minimal space
- Hardware screening systems in standard component bays
- High throughput

Passenger interface graphical user interface (GUI):

• Enables accessible property and on-person self-screening in a simple, clear passenger GUI and screening workflow "Wizard".

• Screen(s) displaying passenger process "Wizard" instructions for self-divesting of threat objects identified by an X-ray or On Person Screening (OPS) Automatic Target Recognition (ATR) algorithm and rescanning, minimizing ATR false alarms.

• Multi-modality TSO touchscreen (or contact-less interface) workstation for process monitoring and alarm resolution.

Passenger data risk processing and future biometric interface

• Fully enabled and integrated multi-cloud architecture featuring a robust API Gateway with established services

• Real-time KTN validation service through digital identity and identity assurance apps that are integrated with facial matching software for biometric authentication

2. Passenger Self-Screening Preparation:

The passenger moves into the cabin CAB of the passenger self-service screening device SD, which is designed to be comfortable, spacious and minimize anxiety or claustrophobia. The passenger self-screening device incorporates video (by means of a video camera) and associated analytics to monitor passenger, communicate that the passenger self- screening device is engaged and identify anomalous behaviour. An interactive screen in the self-screening device communicates screening and divestment process to passenger. Video with audio instruction and signage will provide instruction. Thereto, a projector is provided, e.g. in a ceiling of the cabin, which projects a video image PRO onto a wall of the cabin, as depicted in Figure 2. Figure 2 further schematically depicts antennas ANT of a millimetre wave scanning system forming part of a sensor, to scan the person.

Video system

• IP camera-based system including multiple cameras for multiple viewpoints to cover all passenger activity within the passenger self- screening device.

3. Person Screening:

Upon entering the passenger self- screening device, on-person screening commences. Passenger divest requirements are initially determined by the video analytics system (e.g. coats, outerwear) and the passenger interface screen communicates divest instructions. Additional divestment instructions are communicated to direct passenger to remove and place

in the property screening system along with any other items normally divested from the person (phone, keys etc.). A drawer DRW may be opened by the control device to form a hand luggage tray into which the hand luggage (incl. phone, keys, etc.) may be deposited. The passenger is then cued to adopt the scan pose by the video system. Optimal passenger foot position on the floor FRL is also communicated to ensure that footwear screening system FWS can operate effectively. The passenger self- screening device communicates to passenger indicating when divestment and scanning is complete. Then the passenger self- screening device instructs passenger to load belongings into a hand luggage drawer.

Voxel Radar: In-Motion millimeter wave body imaging

- Screens passenger during the entire process within the passenger self screening device
- Aggregates scan data to utilize optimized illumination and avoid blind spots

A concept of the interior of the passenger self screening device showing the possible location of the sensor antennas ANT is shown in Figures 4A and 4B.

Figure 4A and 4B: The interior of the passenger self screening device showing the personnel screening system.

4. On-Person Alarm Resolution:

To support passenger self-resolution of on-person alarms, the system's passenger interface indicates to passenger the location of an alarm and instructs passenger PER to remove alarm item or shoes and place them into the hand luggage (property) screener. The projector projects an artificial reality mirror on the wall of the cabin. The alarm item OBJ is indicated in the displayed artificial realty mirror PRO, as depicted in Figures 5A and 5B. Once alarm items or shoes have been put in the property screener, another scan is initiated of both the person and belongings. If the scans are clear, on-person screening is completed. The video system monitors passenger actions to ensure compliance with divest requirements and to detect anomalous behaviour.

5. Property Screening:

Property screening procedures are directed by the passenger self screening device interface. The passenger is directed to place all accessible property into the property screener with other divest items. The passenger self screening device property screener consists of a primary screening system sensor and an automated alarm resolution capability. Both are initiated when the door of the property screener has been closed and will lock during screening. The video system monitors that all items have been placed into the property screening system. The

passenger interface informs the passenger of the property scan progress and status. If the accessible property systems and automatic threat recognition (ATR) do not detect threats, prohibited items or explosives the passenger can collect belongings. The passenger self screening device interface indicates to the passenger that they are cleared to proceed to gate and passenger self screening device door opens automatically.

Static CT primary accessible property screening system.

Figure 7A - 7C depicts 3 examples of possible configurations, whereby the cabin forms a passage between the entry side for to be screened passengers and exit side for screened passengers. The entry side of the cabin can be closed by sliding door SD1, the exit side by sliding door SD2. Once a passenger has identified himself and entered, the sliding door SD1 closes. The sliding door SD2 remains closed until the screening has been completed and no alarm generated. In Figure 7A, a hand luggage depositing station HLDS is provided at the entry side, while the passenger may reclaim the hand luggage after having been screened and left the cabin at exit door SD2 to reclaim the hand luggage at hand luggage reclaiming station HLRS. A hand luggage scanning apparatus HLSA is provided between the depositing station and reclaiming station, e.g. adjacent to the cabin to scan the hand luggage while the passenger is screened in the cabin.

Figure 7B depicts a similar arrangement, whereby the passenger takes the hand luggage into the cabin, to be deposited into the drawer DRW. The hand luggage screening apparatus HLSA is arranged adjacent to the cabin, and fed with the hand luggage from the drawer by a conveyor. Once screened the hand luggage is conveyed back to the drawer to be recollected by the passenger before exiting the cabin via the exit at sliding door SD2. Figure 7C depicts a variant to the embodiment of Figure 7B, whereby the passenger takes the hand luggage into the cabin, to be deposited into the drawer DRW. The hand luggage screening apparatus HLSA is arranged adjacent to the cabin, and fed with the hand luggage from the drawer by a conveyor. Once screened the hand luggage is conveyed to a reclaiming station (e.g. drawer) outside of the cabin, at the exit side, to be recollected by the passenger after exiting the cabin via the exit at sliding door SD2. Hence, once the screening has been completed, the passenger is requested to exit the cabin, thus enabling entry of a following person via the entry at SD1 to commence scanning a following passenger, while the passenger that has just left the cabin can recollect the hand luggage at ease.

6. Property Alarm Resolution:

To resolve alarms in passengers' belongings, the passenger self screening device interface identifies the item to passenger and instructs them to remove the item(s). The item is placed next to the bag in the scanner and the scan is repeated. Once bag and the item are cleared, the passenger is instructed to retrieve all items from the property screening and to proceed to gate.

If the bag and/or the item(s) cannot be cleared, the system automatically alerts an operator who is immediately dispatched to the passenger self screening device to conduct further alarm resolution procedures.

7. Passenger Departure:

Passenger departs for their journey; passenger self screening device is free to screen the next passenger.

Arrangements of plural hand luggage screening devices, such as depicted and described with reference to Figures 7A – 7C, as depicted in a front view Figure 8A and rear view Figure 8B. The screening devices are connected against each other to form a chain whereby the exit doors of the cabins discharge into an exit side EXT while the entry doors of the cabins all connect to the entry side ENT. As depicted in Figures 8A and 8B, the chain of screening devices meanders, so as to reduce a total required floorspace.

Figure 6 depicts a cabin of a screening device SD and a hand luggage screening apparatus HLSA. The cabin and hand luggage screening apparatus are provided with plural hand luggage drop of stations HLDS at the entry side of the cabin and plural hand luggage reclaiming stations HLRS at the exit side of the cabin. A conveyor conveys the hand luggage from the depositing stations to the reclaiming stations. The hand luggage screening apparatus may be bi-directional, i.e. hand luggage may be fed from left to fight or vice versa (seen in the plane of the drawing). The conveyor connects both entries/exits of the hand luggage screening apparatus to the depositing stations and reclaiming stations to increase conveying capacity. Due to the bi-directional nature, in case a screening of a tray is to be repeated (e.g. on operator instructions), the bidirectional conveyor may convey the tray back into the hand luggage screening apparatus. As the hand luggage depositing and the hand luggage reclaiming may each take more time than the screening of the hand luggage respectively the screening of the person, a capacity of the hand luggage screening apparatus and a capacity of the screening cabin CA of

the screening device SD may hence be used more efficiently, while enabling the persons to depositing the hand luggage and reclaim the and luggage at ease.

Figure 9 depicts dual hand luggage screening apparatuses HLSA1, HLSA2 whereby a conveyor CON in between them is provided with a shielding SHD to shield X-ray radiation. The conventions lead flaps that may interfere with the hand luggage conveying may be omitted. loading ports LP and exit ports DP having conveying directions LPCON that are perpendicular to the direction between the hand luggage screening apparatuses connect to the depositing HLDS and reclaiming stations and may be provided with lead curtains and loading port screens.

P34769NL00

CONCLUSIES

1. Controle-inrichting voor het controleren van een persoon, waarbij de controle-inrichting omvat:
   - een cabine omvattende een wand die een binnenruimte ten minste gedeeltelijk omhult,
   - een sensor op ten minste een gedeelte van het oppervlak van de wand welke naar de binnenruimte gekeerd is, waarbij de sensor is ingericht om de persoon die in de ruimte aanwezig is te meten,
   - een projector die een beeld in de binnenruimte projecteert om door de persoon te worden gezien, en
   - een besturingsinrichting die verbonden is met de sensor en de projector en ingericht is voor:
     - het bedrijven van de sensor voor het meten van de persoon die in de binnenruimte aanwezig is;
     - het aansturen van de projector voor het projecteren van instructies aan de persoon, geassocieerd met het bedrijf van de sensor.

2. Controle-inrichting volgens conclusie 1, waarbij de besturingsinrichting verder is ingericht voor:
   - het afleiden van een locatie van een object op de persoon uit de sensordata, en
   - het besturen van de projector voor het weergeven van de locatie van het object op de persoon.

3. Inrichting volgens conclusie 2, waarbij de sensor verder een camera omvat die gericht is naar een gewenste positie van de persoon in de binnenruimte, waarbij de camera is verbonden met de besturingsrichting voor het overbrengen van beelddata naar de besturingsinrichting, en waarbij de besturingsinrichting is ingericht voor genereren van een spiegelbeeld van de persoon uit de beelddata, voor het creëren van een gefuseerd beeld van de persoon door het fuseren van het object op de afgeleide locatie in het spiegelbeeld van de persoon en voor het besturen van de projector voor het weergeven van het gefuseerde beeld van de persoon.

4. Controle-inrichting volgens een van de voorgaande conclusies, waarbij de controle-inrichting verder de camera omvat die ingericht is voor het genereren van beelddata, een gebaarsensor die een gebaar van de persoon meet en ingericht is voor het genereren van

gebaardata en een bewegingssensor die een beweging van de persoon opneemt en ingericht voor het genereren van bewegingsdata, waarbij de besturingsinrichting is ingericht voor het uitvoeren van een risicobeoordeling uit een combinatie van de sensordata, de camerabeelddata, de gebaardata en de bewegingsdata en voor het genereren van een waarschuwingsbericht gebaseerd op de risicobeoordeling.

5. Controle-inrichting volgens conclusie 4, waarbij de besturingsinrichting is ingericht voor het uitvoeren van de risicobeoordeling gebruikmakend van een zelflerend systeem, waarbij het zelflerende systeem bij voorkeur is getraind gebruikmakend van een trainingsdataset die additioneel operator beoordeling omvat in antwoord op de sensordata, camerabeelddata, gebaardata en bewegingsdata.

6. Controle-inrichting volgens een van de voorgaande conclusies, verder omvattende een schoeiselsensor op ten minste een gedeelte van het oppervlak van een vloer van de cabine, waarbij de schoeiselsensor is ingericht voor het meten van het schoeisel van de persoon die in de binnenruimte aanwezig is.

7. Controle-inrichting volgens een van de voorgaande conclusies, waarbij de besturingsinrichting is ingericht voor

- het opzetten van een verbinding met een operatorcontrole,
- het uitvoeren van een instructie naar een operator bij de operatorconsole voor communiceren met de persoon, en
- het besturen van de projector voor het weergeven van een beeld van de operator op de operatorcontrole.

8. Controle-inrichting volgens conclusie 7, waarbij de besturingsinrichting is ingericht voor

- het afleiden uit de sensordata van een locatie van een object op de persoon,
- het verzenden van de locatie van het object op de persoon naar de operator console, en
- het verzenden van instructies naar de operator console welke de operator vragen om aan de persoon de locatie van het object uit te leggen.

9. Controle-inrichting volgens conclusie 7 of 8, waarbij de besturingsinrichting is ingericht voor het uitvoeren van de instructies naar de operator in geval aan een criterium wordt voldaan, waarbij het criterium ten minste één omvat van:

de persoon initieert een operatorcontactverzoek,

de besturingsinrichting stelt vast dat een tevoren bepaalde controletijd is verlopen,
de besturingsinrichting stelt vast dat de aanwezigheid van een object is vastgesteld.

10. Controle-inrichting volgens een van de voorgaande conclusies, waarbij de sensor een radiogolfscanner omvat omvattende een radiogolfantennematrix, waarbij de radiogolfantennematrix ten minste een gedeelte van het oppervlak van de wand achter het geprojecteerde beeld omvat.

11. Controle-inrichting volgens een van de voorgaande conclusies, waarbij de projector is ingericht voor het projecteren van een tweedimentionaal beeld op de wand van de cabine of een driedimensionaal beeld in de binnenruimte.

12. Controle-inrichting volgens een van de voorgaande conclusies, verder omvattende een object-deponeerbak en waarbij de instructies instructies omvatten voor het deponeren van het object in de object-deponeerbak.

13. Controle-inrichting volgens conclusie 12, verder omvattende een handbagage controle-inrichting, en een transportinrichting voor het transporteren van de handbagage van de cabine naar de handbagage controle-inrichting, waarbij de besturingsinrichting is ingericht voor het aansturen van de transportinrichting voor het transporteren van de handbagage die in de object-deponeerlade is gedeponeerd naar de handbagage controle-inrichting, voor het aansturen van de handbagage controle-inrichting voor het controleren van de handbagage, en voor het aansturen van de transportinrichting voor het transporteren van de handbagage terug de cabine in.

14. Controle-inrichting volgens conclusie 12 of 13, waarbij de controle-inrichting verder een identificatie-inrichting omvat, waarbij de controle-inrichting is ingericht voor het identificeren van de persoon gebruikmakend van identificatiedata van de identificatie-inrichting, en het associëren van de deponeerbak met de geïdentificeerde persoon.

15. Controle-inrichting volgens een van de voorgaande conclusies, waarbij de besturingsinrichting is ingericht voor het aansturen van de display-inrichting voor het verschaffen van instructies aan de persoon voor het volgen van een tevoren bepaalde controlesequentie.

16. Controle-inrichting volgens conclusie 15, waarbij de sensor verder de camera omvat, waarbij de besturingsinrichting is ingericht voor het verwerken van een beeld van de camera

voor het daaruit afleiden van een voortgang van de screening van de persoon, voor het vergelijken van de afgeleide voortgang van de controle met de tevoren bepaalde controlesequentie, en voor het afleiden van de instructies die aan de persoon worden verschaft uit de vergelijking van de afgeleide voortgang met de tevoren bepaalde controlesequentie,

17. Controle-inrichting volgens een van de voorgaande conclusies, verder omvattende:

een eerste identificatiestation dat ingericht is voor het verzoeken aan een persoon om een token te presenteren,

een handbagage deponeerstation dat ingericht is voor het verzamelen van handbagage die door de persoon is gedeponeerd,

waarbij het eerste identificatiestation is geassocieerd met het handbagage deponeerstation,

een handbagage controle-inrichting die ingericht is voor het controleren van de handbagage,

een controle-inrichting volgens een van de voorgaande conclusies,

een handbagage retourneerstation, stroomafwaarts van de handbagage controle-inrichting, ingericht voor het retourneren van de handbagage die door de persoon is gedeponeerd,

een tweede identificatiestation dat is geassocieerd met de handbagage retourneerinrichting, waarbij de screeninrichting een doorgang vormt voor de persoon van het handbagage deponeerstation naar het handbagage retourneerstation, en

een handbagage transportsysteem dat ingericht is voor het transporteren van de handbagage van het handbagage deponeerstation via de handbagage controleerinrichting naar het handbagage retourneerstation,

waarbij de besturingsinrichting verder is ingericht voor

het lezen van de token dat door de persoon bij het eerste identificatiestation is gepresenteerd;

het associëren van het gepresenteerde token met de handbagage die door persoon bij het handbagage deponeerstation is gedeponeerd;

nadat de persoon is gecontroleerd door de controle-inrichting, lezen van de token die door de persoon bij het tweede identificatiestation bij het retourneerstation wordt gepresenteerd,

het besturen van de het handbagage transsportsysteem voor het transporteren van de handbagage die met de token is geassocieerd naar het handbagage retourneerstation.

18. Controle-inrichting volgens conclusie 17, omvattende

meerdere handbagage retourneerstations, en

waarbij de besturingsinrichting is ingericht voor het toekennen van één van de meerdere handbagage retourneerstations aan het token, voor het besturen van het handbagage transportsysteem voor het transporteren van de handbagage die is geassocieerd met het token naar de toegekende ene van de meerdere handbagage retourneerstations en voor het leveren van instructies aan de persoon die de controle-inrichting is gepasseerd en het token presenteert voor het ophalen van de handbagage die is geassocieerd met het token bij de aangewezen ene van de meerdere handbagage retourneerstations.

19. Controle-inrichting volgens conclusie 17 of 18, waarbij de controle-inrichting verder de objectdeponeerbak omvat en waarbij de veiligheidssysteembesturingsinrichting is ingericht voor het besturen van handbagage transportsysteem voor het transporteren van het object dat in de objectdeponeerbak is gedeponeerd naar de toegekende ene van de meerdere handbagage retourneerstations.

20. Controle-inrichting bij voorkeur volgens een van de conclusies 17-19 omvattende een handbagage deponeerstation, een handbagage retourneerstation, een eerste handbagage controle-inrichting, een tweede handbagage controle-inrichting en het handbagage transportsysteem voor het transporteren van de handbagage van het handbagage deponeerstation naar enige van de eerste en de tweede handbagage controle-inrichting en van enige van de eerste en de tweede handbagage controle-inrichtingen naar het handbagage retourneerstation, waarbij het transportsysteem een afgeschermd handbagagetransportpad omvat dat zich uitstrekt tussen de eerste en tweede handbagage controle-inrichtingen, waarbij het handbagage deponeerstation in het afgeschermde handbagagetransportpad laadt via een laadpoort met een transportrichting die loodrecht is op een laadtransportinrichting tussen de eerste en tweede handbagage controle-inrichtingen, waarbij het afgeschermde handbagagetransportpad ontlaadt naar het handbagage retourneerstation via een ontlaadpoort met een ontlaadtransportrichting die loodrecht is op een transportrichting tussen de eerste en tweede handbagage controle-inrichtingen en waarbij stralingsschilden zijn ingericht voor het afschermen van straling die wordt gegenereerd door de eerste en tweede handbagage controle-inrichtingen en opgesteld bij de laadpoort en bij de ontlaadpoort.

21. Controle-inrichting volgens conclusie 20, waarbij de stralingsschilden loodgordijnen zijn.

22. Controle-inrichting volgens conclusie 20 of 21, waarbij afschermflappen bij de eerste en tweede handbagage controle-inrichtingen zijn weggelaten.

23. Controle-inrichting volgens een van conclusies 20-22, waarbij de laadpoort een laadpoortschild omvat dat zich uitstrekt langs de laadrichting en waarbij de ontlaadpoort een ontlaadpoortschild omvat dat zich uitstrekt langs de ontlaadrichting.

5

24. Controle-inrichting volgens een van conclusies 20-23, waarbij de eerste en tweede handbagage controle-inrichtingen bi-directioneel zijn en waarbij het afgeschermde handbagagetransport wat bi-directioneel is.

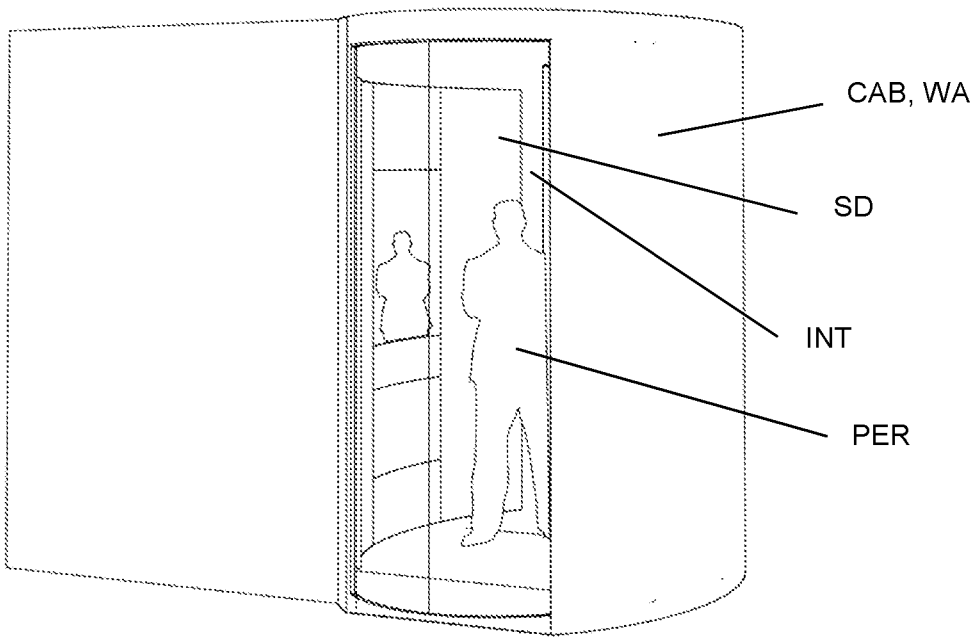

Fig. 1

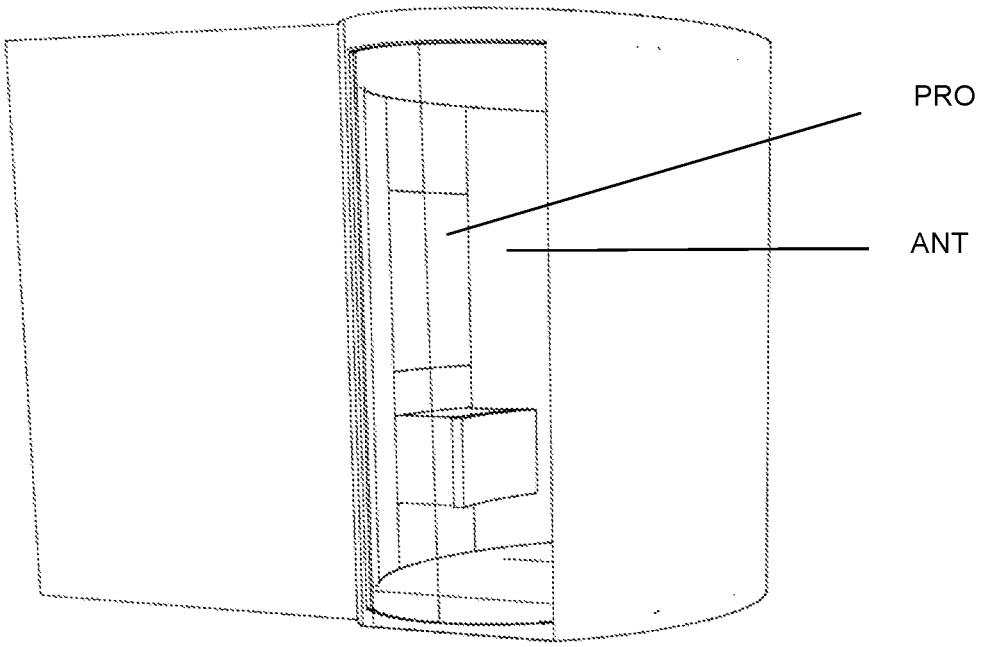

Fig. 2

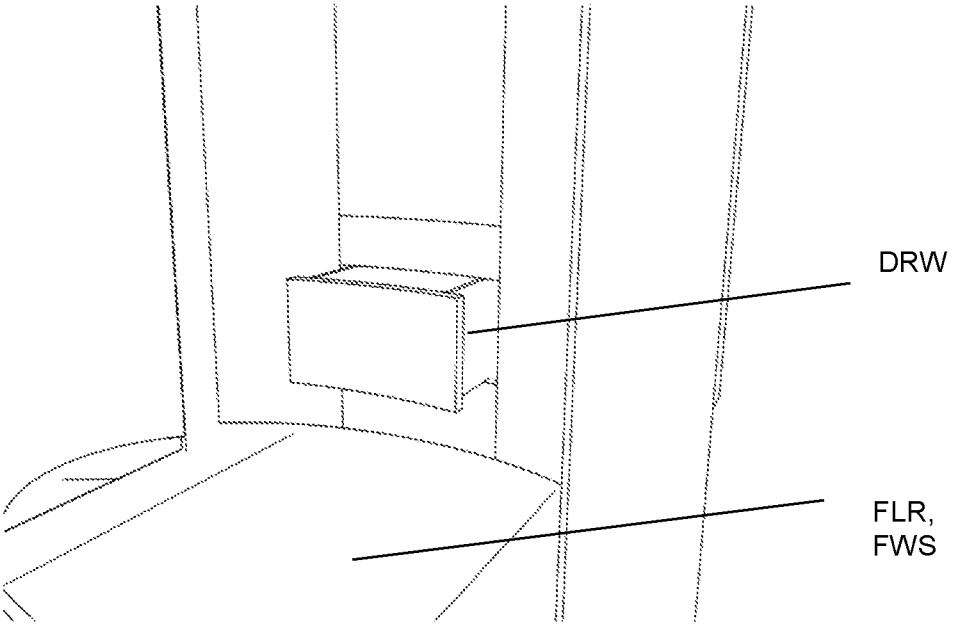

Fig. 3

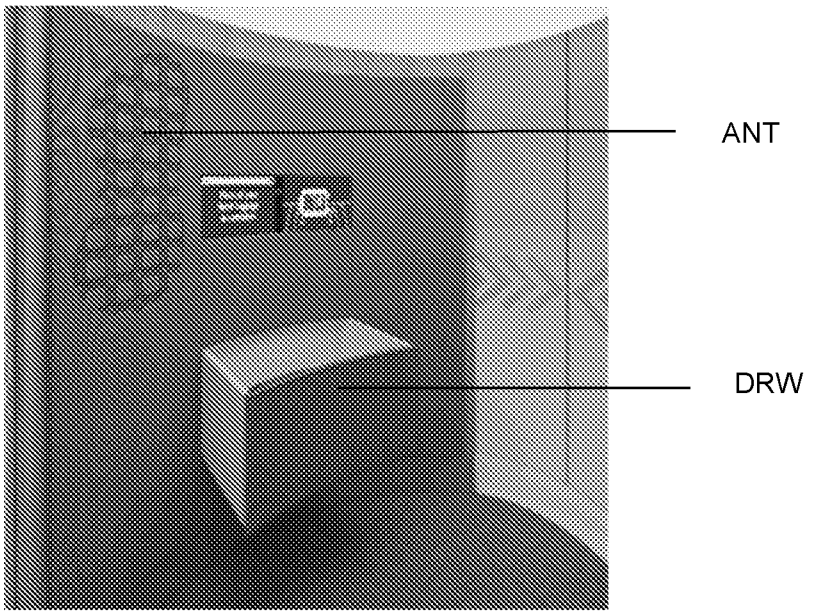

Fig. 4A

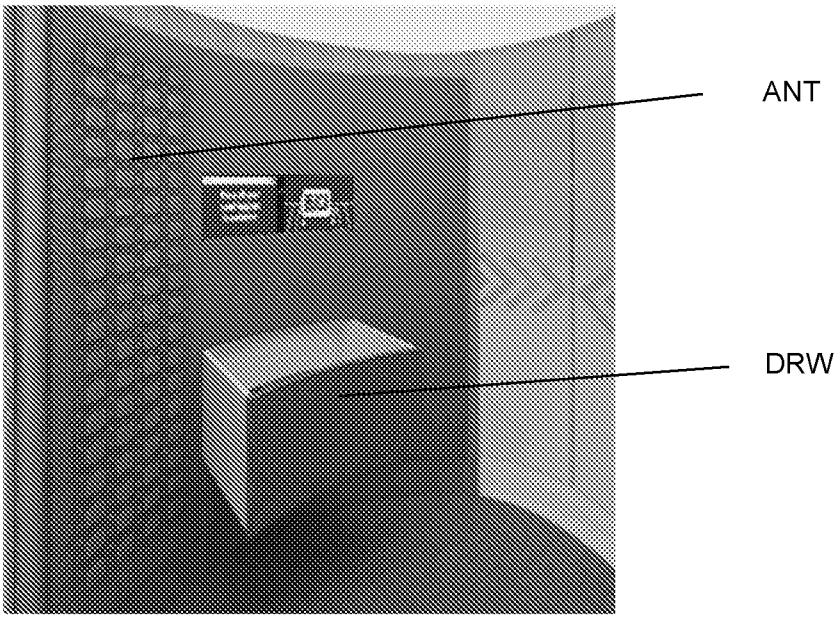

Fig. 4B

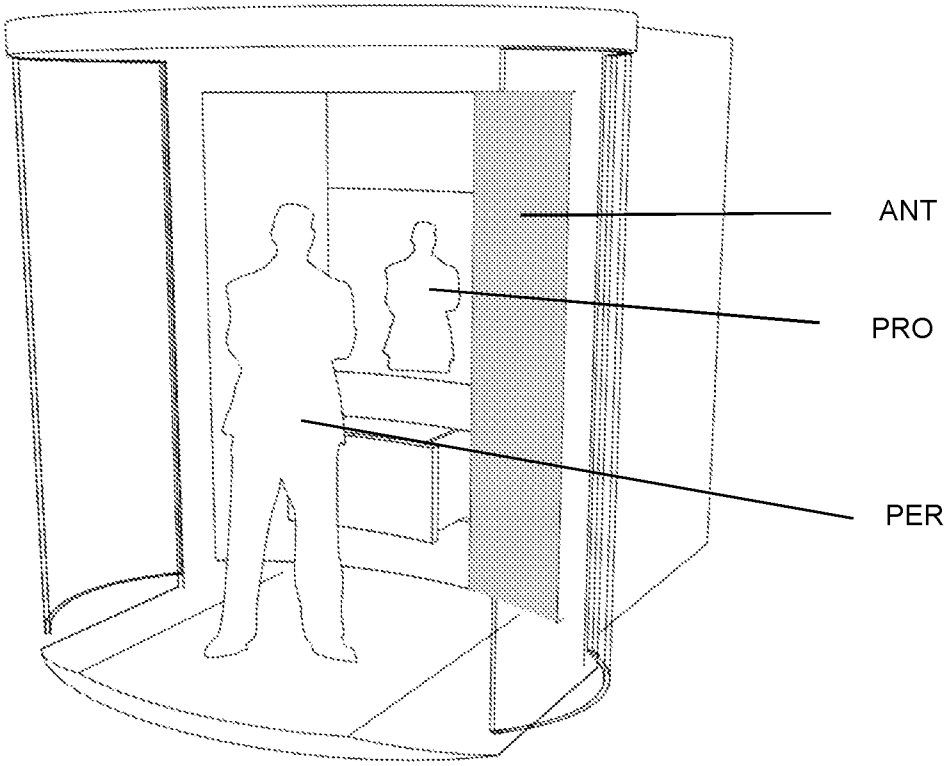

Fig. 5A

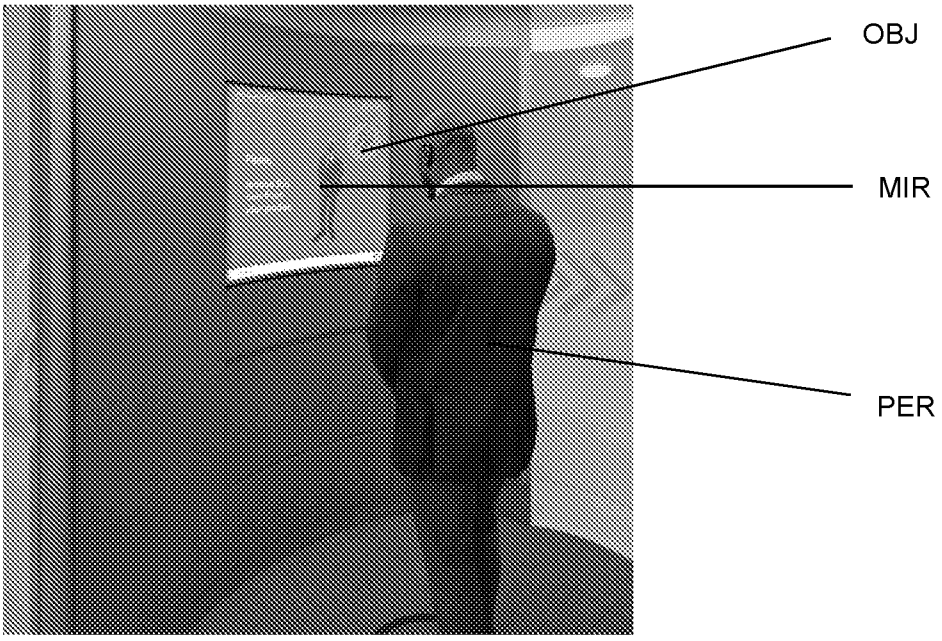

Fig 5B

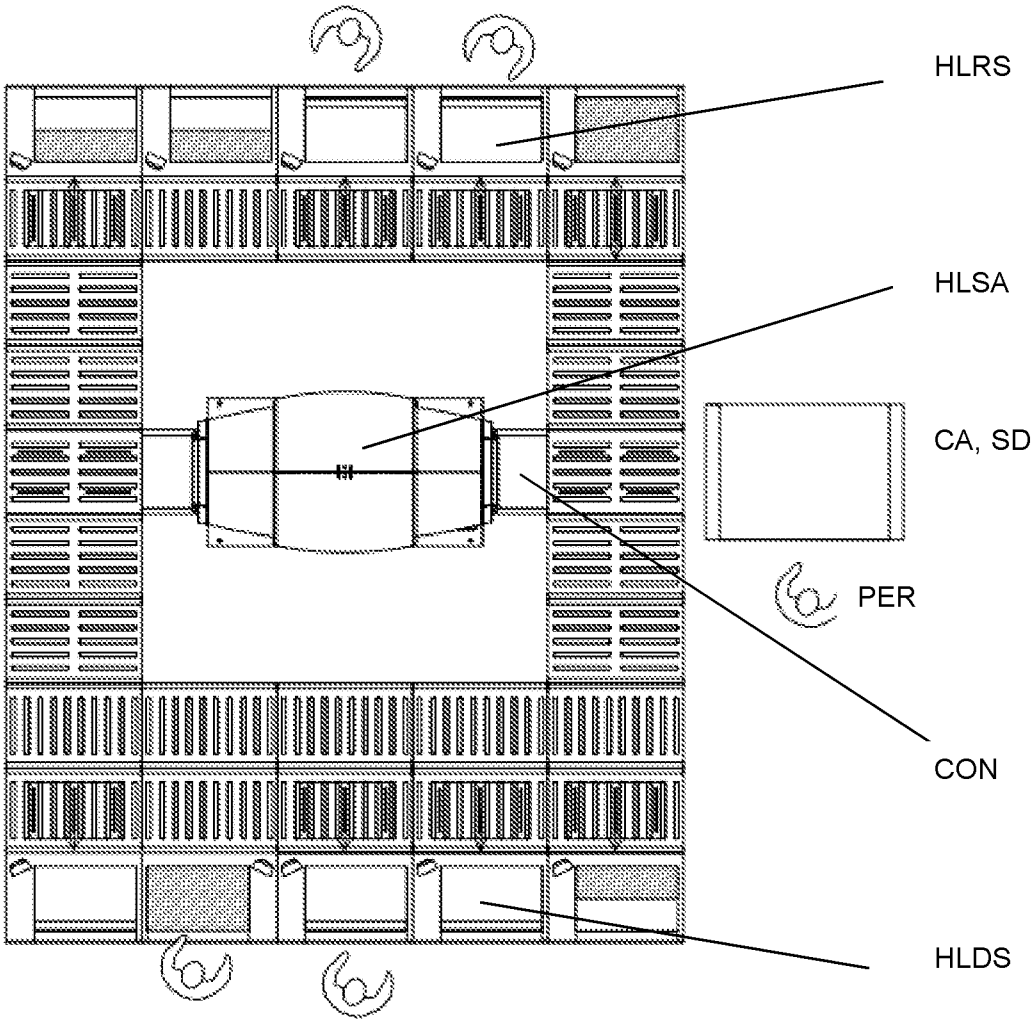

Fig. 6

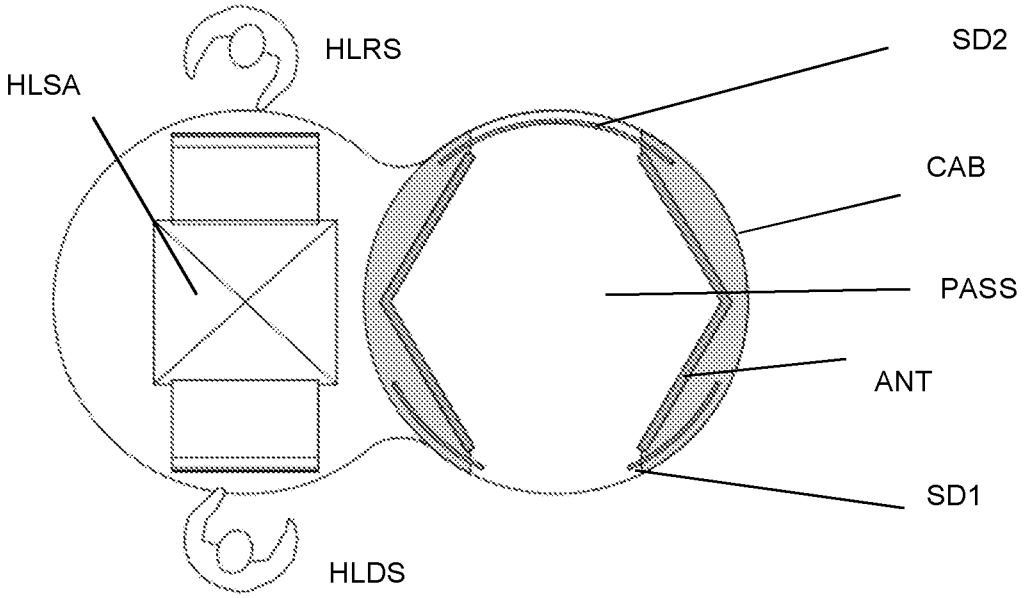

Fig. 7A

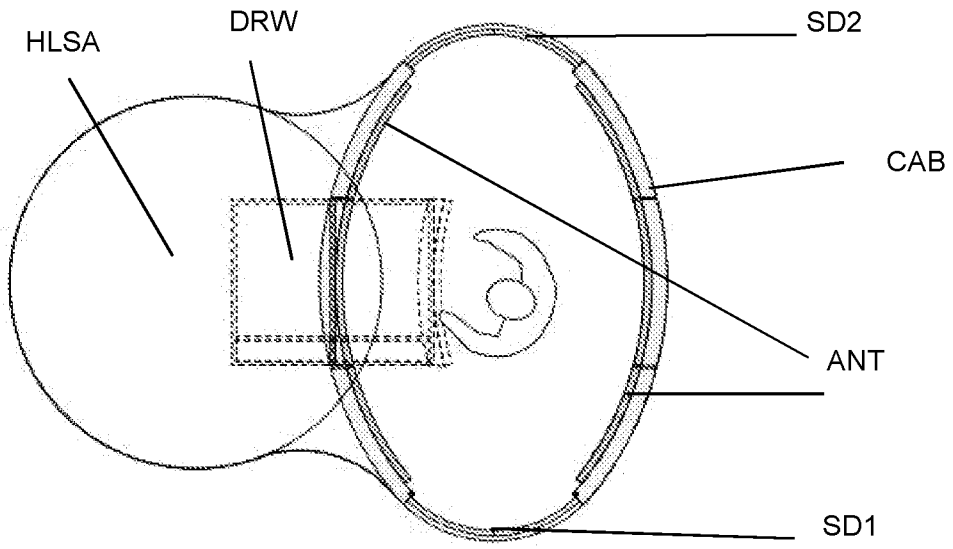

Fig. 7B

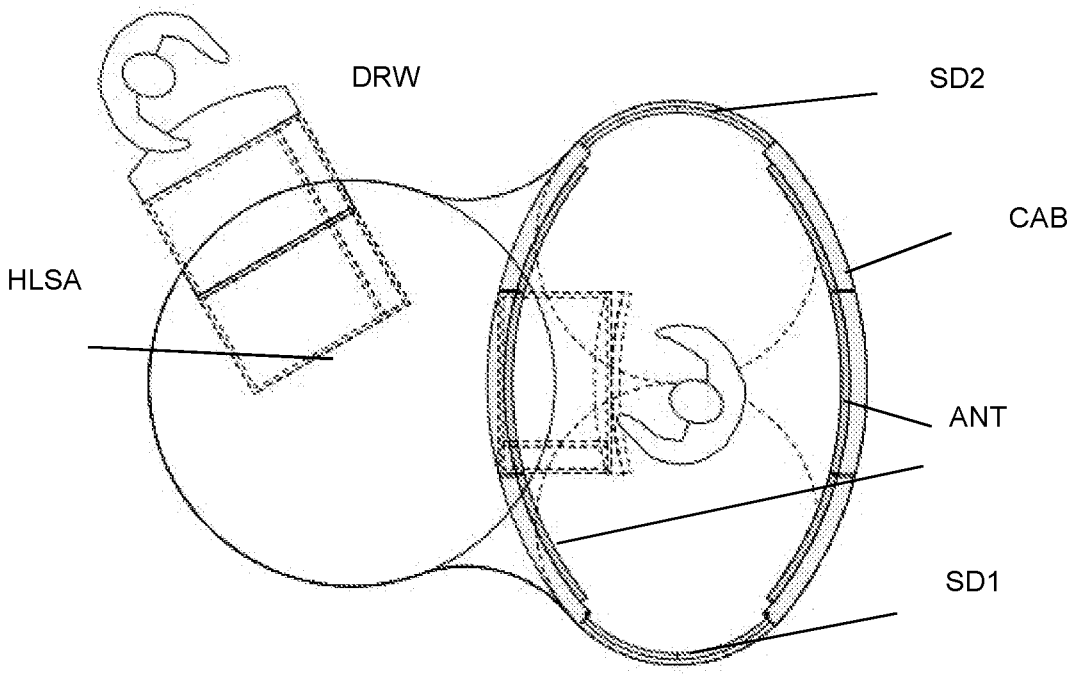

Fig. 7C

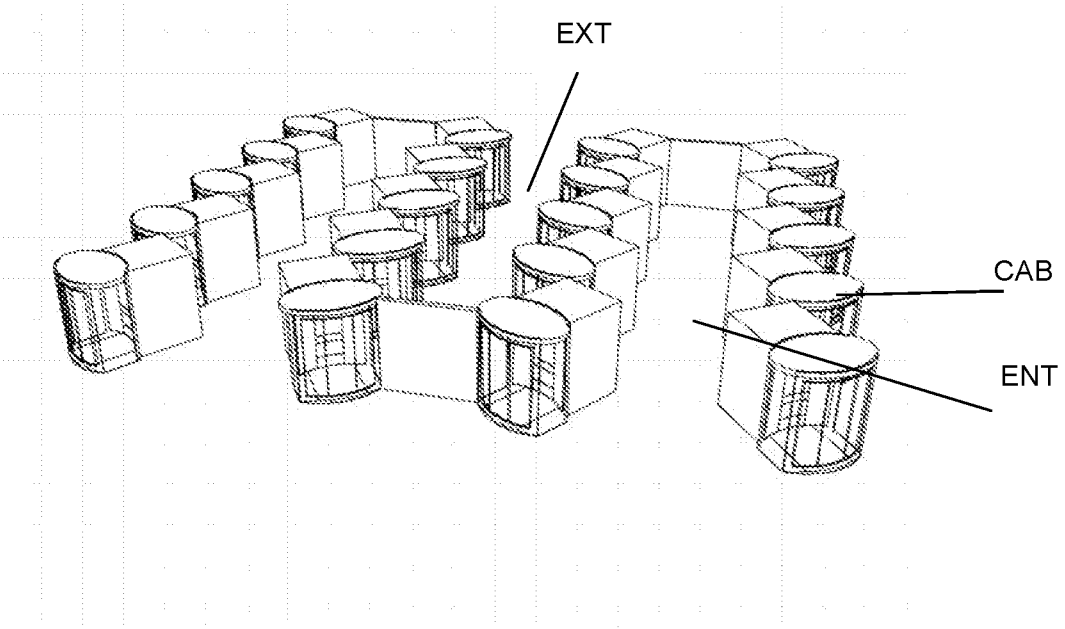

Fig. 8A

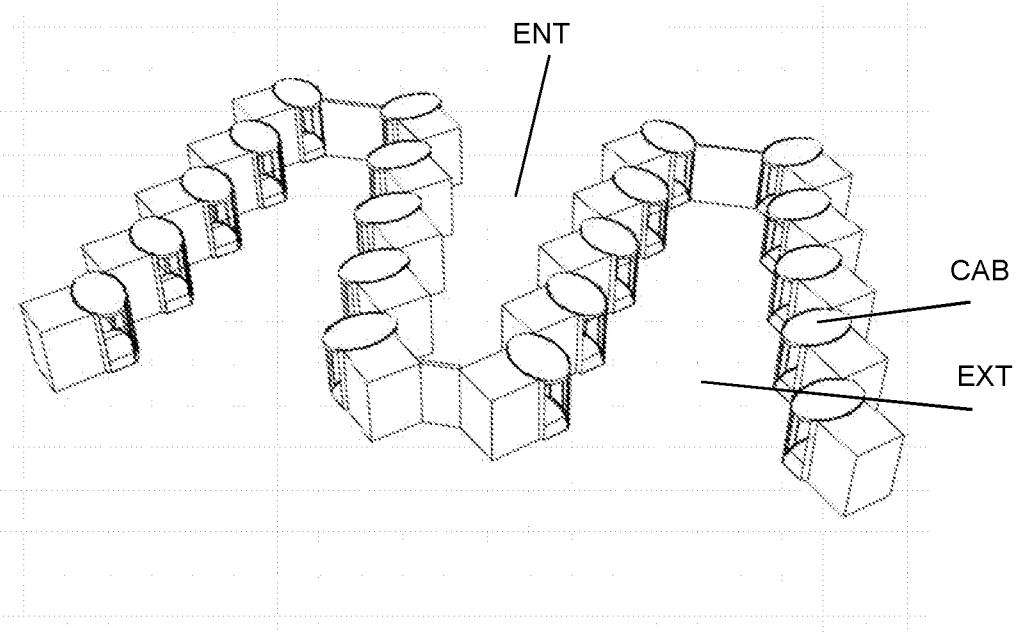

Fig. 8B

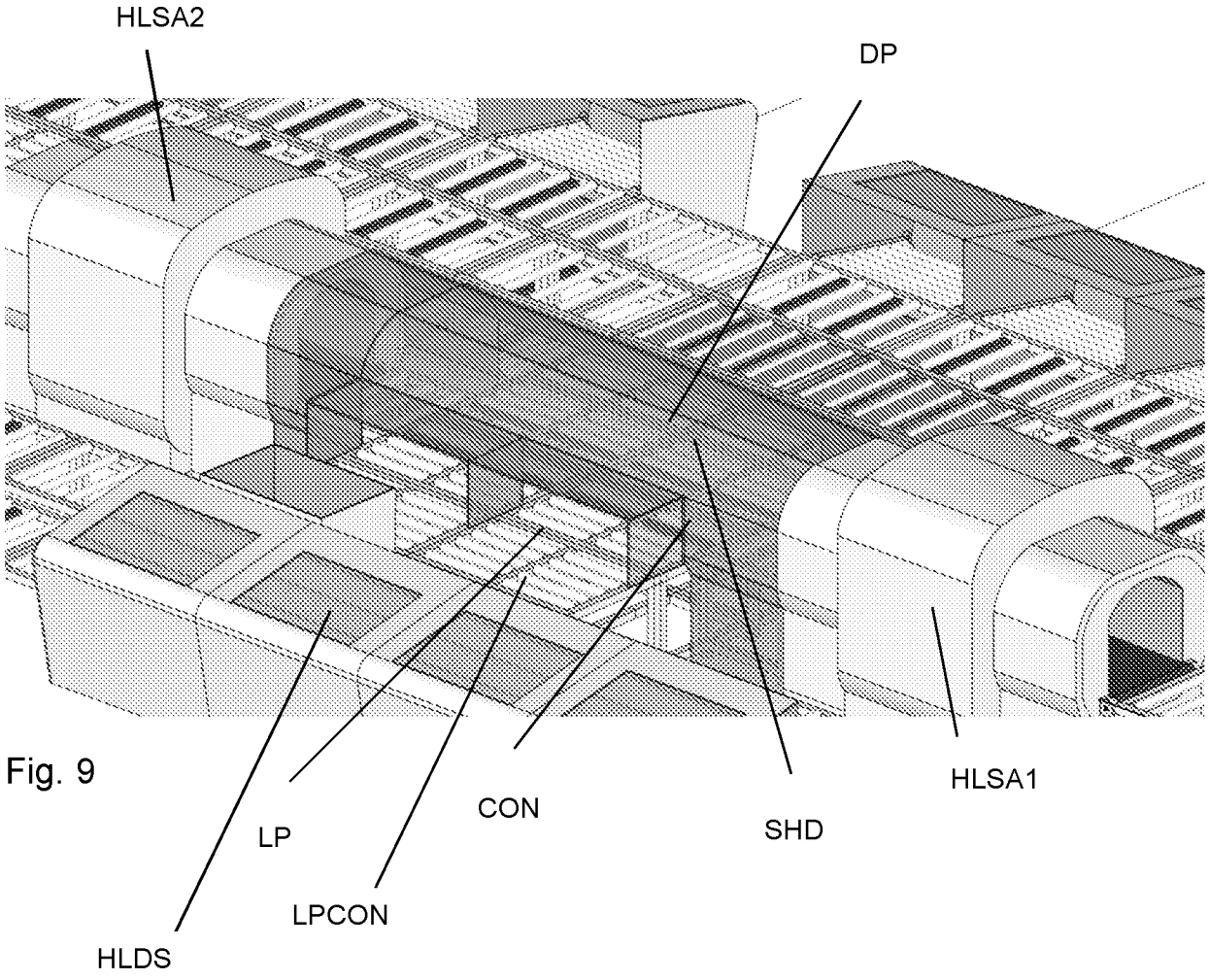

Fig. 9

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE
Nederlands aanvraag nr. **2026564**	Indieningsdatum **28-09-2020**
	Ingeroepen voorrangsdatum
Aanvrager (Naam) **Scarabee Systems & Technology B.V.**	
Datum van het verzoek voor een onderzoek van internationaal type **05-12-2020**	Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. **SN77559**

I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)

Volgens de internationale classificatie (IPC)

Zie onderzoeksrapport

II. ONDERZOCHTE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimumdocumentatie

Classificatiesysteem	Classificatiesymbolen
IPC	**Zie onderzoeksrapport**

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)

ONDERZOEKSRAPPORT BETREFFENDE HET RESULTAAT VAN HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE

Nummer van het verzoek om een onderzoek naar de stand van de techniek
NL 2026564

A. CLASSIFICATIE VAN HET ONDERWERP
INV. G01S13/88 G01S13/89 G01S13/86 G01S7/41 G01S7/04
B64F1/36 G07C9/10 G06Q50/26
ADD.
Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHTE GEBIEDEN VAN DE TECHNIEK

Onderzochte miminum documentatie (classificatie gevolgd door classificatiesymbolen)
G01S B64F G07C G06Q

Onderzochte andere documentatie dan de mimimum 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 trefwoorden)
EPO-Internal, INSPEC, WPI Data

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
A	US 2016/116581 A1 (MOHAMADI FARROKH [US]) 28 april 2016 (2016-04-28) * samenvatting * * alinea [0003] * * alineas [0025] - [0027]; figuur 1 *	1-24
A	US 2004/090359 A1 (MCMAKIN DOUGLAS L [US] ET AL) 13 mei 2004 (2004-05-13) * samenvatting * * alinea [0003] * * alineas [0029], [0030], [0060] - [0063]; figuren 1,6,7 *	1-24
A	US 2016/216371 A1 (AHMED SHERIF SAYED [DE] ET AL) 28 juli 2016 (2016-07-28) * samenvatting * * alinea [0002] * * alineas [0085] - [0102]; figuren 1-4 *	1-24

-/--

[X] Verdere documenten worden vermeld in het vervolg van vak C.

[X] Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

° Speciale categorieën van aangehaalde documenten

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

"D" in de octrooiaanvrage vermeld

"E" eerdere octrooi(aanvrage), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

"L" om andere redenen vermelde literatuur

"O" niet-schriftelijke stand van de techniek

"P" tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

"T" na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvrage, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

"X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

"Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

"&" lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid	Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type
11 juni 2021	

Naam en adres van de instantie	De bevoegde ambtenaar
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	van Norel, Jan

1

ONDERZOEKSRAPPORT BETREFFENDE HET RESULTAAT VAN HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE

Nummer van het verzoek om een onderzoek naar de stand van de techniek
NL 2026564

C.(Vervolg). VAN BELANG GEACHTE DOCUMENTEN

Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
A	WO 2015/077167 A1 (APSTEC SYSTEMS USA LLC [US]) 28 mei 2015 (2015-05-28) * samenvatting * * alinea [0002] * * alinea [0017]; figuur 1 * -----	1-24

ONDERZOEKSRAPPORT BETREFFENDE HET RESULTAAT VAN HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar de stand van de techniek
NL 2026564

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
US 2016116581 A1	28-04-2016	GEEN	
US 2004090359 A1	13-05-2004	AT 467848 T	15-05-2010
		EP 2133709 A1	16-12-2009
		EP 2148217 A1	27-01-2010
		IL 175070 A	31-07-2011
		JP 4751332 B2	17-08-2011
		JP 2007517275 A	28-06-2007
		US 2004090359 A1	13-05-2004
US 2016216371 A1	28-07-2016	DE 102014210227 A1	23-07-2015
		US 2016216371 A1	28-07-2016
		WO 2015110564 A1	30-07-2015
WO 2015077167 A1	28-05-2015	WO 2015077167 A1	28-05-2015
		WO 2015077168 A2	28-05-2015
		WO 2015077169 A1	28-05-2015

WRITTEN OPINION

File No.	Filing date *(day/month/year)*	Priority date *(day/month/year)*	Application No.
SN77559	28.09.2020		NL2026564

International Patent Classification (IPC)
INV. G01S13/88 G01S13/89 G01S13/86 G01S7/41 G01S7/04 B64F1/36 G07C9/10 G06Q50/26

Applicant
Scarabee Systems & Technology 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
	van Norel, Jan

Application number

WRITTEN OPINION

NL2026564

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

1. Statement

Novelty	Yes:	Claims	1-24
	No:	Claims	
Inventive step	Yes:	Claims	1-24
	No:	Claims	
Industrial applicability	Yes:	Claims	1-24
	No:	Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION

Box No. VII Certain defects in the application

see separate sheet

Box No. VIII Certain observations on the application

see separate sheet

Re Item V

Reasoned statement with regard to novelty and inventive step

1 Reference is made to the following documents:

D1 = US 2016/116581 A1

D2 = US 2004/090359 A1

D3 = US 2016/216371 A1

D4 = WO 2015/077167 A1

2 D1 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document; missing features being striked through)

a screening device (100) for screening a person (102), the screening device comprising:

- a cabin (104,106) comprising a wall (104) at least partly enclosing an inner space,

- a sensor (110) on at least part of the surface of the wall (104) facing the inner space, the sensor being configured to sense the person (102) present in the inner space,

~~- a projector projecting an image into the inner space to be viewed by the person,~~ and

- a control device (120) connected to the sensor ~~and the projector~~ and configured to:

-- operate the sensor to sense the person (102) residing in the inner space;

~~-- drive the protector to project instructions to the person, associated with the operating of the sensor~~

(in Dutch: "Controle-inrichting voor het controleren van een persoon, waarbij de controle-inrichting omvat:
- een cabine omvattende een wand die een binnenruimte ten minste gedeeltelijk om-hult,
- een sensor op ten minste een gedeelte van het oppervlak van de wand welke naar de binnenruimte gekeerd is, waarbij de sensor is ingericht om de persoon die in de ruimte aanwezig is te meten,

- ~~een projector die een beeld in de binnenruimte projecteert om door de persoon te worden gezien,~~ en
- een besturingsinrichting die verbonden is met de sensor ~~en de projector~~ en ingericht is voor:
- het bedrijven van de sensor voor het meten van de persoon die in de binnenruimte aanwezig is;
- ~~het aansturen van de projector voor het projecteren van instructies aan de persoon, geassocieerd met het bedrijf van de sensor~~").

2.1 The subject-matter of claim 1 differs from this known screening device in:

- that a projector projects an image into the inner space to be viewed by the person,

- that the control device is also connected to the projector, and

- that the control device is further configured to drive the protector to project instructions to the person, associated with the operating of the sensor

(in Dutch:

"- dat een projector een beeld in de binnenruimte projecteert om door de persoon te worden gezien,

- dat de besturingsinrichting ook verbonden is met de projector, en

- dat de besturingsinrichting verder is ingericht voor het aansturen van de projector voor het projecteren van instructies aan de persoon, geassocieerd met het bedrijf van de sensor").

Therefore the subject-matter of claim 1 is new.

2.2 The problem to be solved by the present invention may be formulated as the provision of a screening device adapted for an efficient self-service passenger security environment (as derived from the present application, e.g. from line 24 on page 12, and from line 3 on page 3).

2.3 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step for the following reasons:

D2, D3 and D4 describe other screening devices for the screening of a person.

However, none of the prior art documents in the field of passenger security screening devices discloses or suggests to project an image into the inner space of the cabin, e.g. on an inner wall, to be viewed by the passenger and to project instructions what to do to the passenger, associated with the operating of the sensor.

Thus, the person skilled in the art would not be able to arrive at the subject-matter of claim 1.

2.4 The advantage of the above differing features (under point 2.1) is that passenger transfer delays, such as may be evoked in prior art solutions when an operator may need present himself at the cabin to provide instructions to the passenger, may be prevented.

3 Claims 2-24 are dependent on claim 1 and as such also meet the requirements of novelty and inventive step.

Re Item VII

Certain defects in the application

1 Independent claim 1 is not in the two-part form, which in the present case would be appropriate. The features set out under point 2 above are known in combination from D1 and belong to the preamble, and the features set out under point 2.1 above are not known in combination from D1 and belong to the characterizing portion of such a claim.

2 The features of claim 1 are not provided with reference signs placed in parentheses.

Re Item VIII

Certain observations on the application

1 In claim 2, the term "sensor data" (in Dutch: "sensordata"), has no antecedent.

2 Claim 3 defines a "**device** according to claim 2" (in Dutch: "Inrichtung volgens conclusie 2..."), although claim 2 defines a screening device (in Dutch: "controle-inrichting..."). Hence, claim 3 is not consistent when referring to claim 2.

3 In claim 12, the term "object" (in Dutch: "object") has no antecedent

4 In claim 13, the term "hand luggage" (in Dutch: "handbagage") has no antecedent.

5 In claim 15, the term "display device" (in Dutch: "display-inrichting") has no antecedent.

6 In claim 16, the term "camera" (in Dutch: "camera") has no antecedent in claims 1, 2 and 4-15 (but it is in claim 3).