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(54) **AUTOMATIC CONFIGURATION SYSTEM FOR AN OPERATOR CONSOLE**

AUTOMATISCHES KONFIGURATIONSSYSTEM FÜR EINE BEDIENUNGSKONSOLE

SYSTÈME DE CONFIGURATION AUTOMATIQUE POUR UN PUPITRE D'OPÉRATEUR

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Description

TECHNICAL FIELD

[0001] The invention relates to an automatic configuration system for an operator console wherein one or more operators control and monitor physical facilities, operations or physically dispersed services. The system comprises wearable personal identification devices worn by the operators and a control unit for communicating with said wearable personal identification devices in order to detect the presence of said one or more operators within a defined control room area.

BACKGROUND

[0002] Control room environments, especially 24/7-type environments, are often static workplaces where little or no physical activity is required for the human operators in control. Such environments can be depressing, unwelcoming and uncomfortable to work in for extended time periods and human operators often suffer from mental fatigue and boredom that may impair their ability to stay alert and proactive at any given time. The importance of improved ergonomics in such control room environments have long been realized by control room designers and much effort is put into this technical field in order to ensure safe operation of the controlled systems or facilities. For example, modern operator consoles can be adjusted in many ways to fit the physical dimensions and personal preferences of an individual human operator. In the past, operator consoles were typically static and once and for all adapted to a theoretical average operator figure based on a "one size fits all" design approach.

[0003] The US patent application US 2013/0049926 A1 discloses a passive RFID device that performs image recognition. An exemplary application of the passive RFID device is for controlling environmental conditions, such as in an office. A user of the office may have customized settings for light level, temperature, sound or other environmental conditions. In order to have the customized settings automatically adjusted when a user enters the office, a passive RFID device is installed in the office that is able to recognize the user.

[0004] The published international patent application WO 2012/171032 A2 describes determinative processes for wearable devices, including receiving data associated with an event, the data being transformed from an input received using a sensor, evaluating the data to determine a state associated with the wearable device, and generating a recommendation based on the state, the recommendation being presented to a user interface while the wearable device is being used.

[0005] The US patent application US 2013/093670 A1 describes splitting a television screen into sub-screens allocated to a plurality of operators. The television controls display positions and sizes of the sub-screens according to a position relationship between the operators,

distances between the operators and the sub-screens, and rearrangement of the positions of the operators.

[0006] The US patent US 6265978 B1 discloses an apparatus and method for early detection of increased performance impairment, incapacitation or drowsiness of a person. A wrist band is worn by the person and an electrical sensor is pressed against the person's skin by the band to sense physiological conditions.

[0007] Although modern operator consoles may be adjusted to an operator in many ways as described above, the individual settings in present control room systems are generally made manually or by way of separate motor powered or hydraulic activators. Individual settings range from the basic adjustments such as operator desk height, to climate settings and distance to information display monitors. Typically, a problem of inconvenience with current control room systems is that multiple settings must be made separately by the operator in order to achieve an individually adapted work setting for optimal work ergonomics.

SUMMARY

[0008] The object of the present invention is to alleviate the problem mentioned above. Hence, the invention discloses an automatic configuration system for an operator console according to claim 1.

[0009] In a preferred embodiment the operator data includes vital signs and other medical health status parameters. Furthermore, the operator data favourably includes movement pattern data of an operator.

[0010] In an advantageous embodiment of the invention, wherein the operator console includes an adjustable height desk, the control unit monitors the movement pattern of an operator and automatically raises the desk to a position corresponding to a standing position of the operator when a predetermined time-period of operator inactivity is detected.

[0011] Advantageously, the control unit automatically initiates a change in light intensity, light temperature, air ventilation, sound level or a combination thereof when the sensed operator data indicates a state of drowsiness of the operator.

[0012] In a case where the control console includes two or more separate information display screens, the control unit automatically moves the display of prioritized information for a dedicated operator from a first information display screen located at a first distance from the operator to a second information display screen located at a second distance from the operator, said first distance exceeding said second distance.

[0013] In an advantageous embodiment, the control unit increases the sound volume for alarms and verbal messages with increased distance between the operator and the operator console.

[0014] Preferably, each personal identification device is adapted to be programmable with individually adapted operator settings including physical dimension configu-

ration for the operator console. The operator settings are communicated to the control unit upon operator log-in to the operator console and the control unit controls the operator console so as to be configured according to the operator settings. Advantageously, the operator settings further include activation settings enabling or not enabling selective automatic configuration functions.

[0015] In one embodiment of the invention, said wearable personal identification and sensor device includes a radio-frequency identification (RFID) tag and may be shaped as a wristband. Accordingly, the control unit preferably includes a radio-frequency identification (RFID) reader. The system may be an Active Reader Passive Tag (ARPT) system or an Active Reader Active Tag (ARAT) system. In an alternative embodiment, the control unit 7 may alternatively communicate with the wearable identification devices by way of so called Near Field Communication technology (NFC) or any other short-range wireless communication technology suitable for the communication.

[0016] The invention can be applied in different types of control room environments, such as in electric power plants, ship bridge controls, manufacturing industry and similar environments where a round-the clock alertness must be upheld in order to secure a safe operation.

[0017] Further advantages and advantageous features of the invention are disclosed in the following description and in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] With reference to the appended drawings, below follows a more detailed description of embodiments of the invention cited as examples.

Fig. 1 shows a simplified schematic overview of an operator console equipped with an automatic configuration system according to the present invention.

Fig. 2 shows a schematic drawing of an operator's wrist wearing a personal identification device shaped as a wristband and including a radio-frequency identification tag (RFID) tag.

Fig. 3a shows a schematic representation of an operator console with three information display screens and an operator positioned to the left of the console.

Fig. 3b shows the same operator console as in Fig. 3a but here the operator has moved to the right side of the console, and that the control unit then orders an prioritized information interface to be displayed closer to the operator.

Fig. 4a shows a schematic representation of an operator console with three information display

screens and an operator positioned to the left of the console.

Fig. 4b finally shows a shows the same operator console as in Fig. 4a but here the operator has moved further away from the console, and the control unit then orders a prioritized information interface to be displayed in a larger font size for improved readability by the operator.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS OF THE INVENTION

[0019] The invention will now be described with reference to embodiments of the invention and with reference to the appended drawings. With initial reference to Fig. 1, this figure shows a schematic overview of an operator console 1. The operator console 1 in this example is of a larger type designed for two or more operators A, B even though the invention is equally applicable to an operator console of a smaller type intended for one operator only. The operator console 1 includes a desk 2 provided with a multiplicity of information display screens 3, as well as three larger information display screens 4a, 4b, 4c which are supported by a height adjustable support structure 5. A lighting armature 6 is mounted over the desk 2 and a control unit 7 is positioned on the light armature 6 in the shown example. In alternative embodiments, the control unit 7 may be positioned elsewhere on or adjacent to the control console 1.

[0020] In Fig. 1, two human operators A, B are shown standing just in front of the desk 2 and within a defined control room area 8 indicated by the dashed square surrounding the operator console 1.

[0021] The operators A, B control and monitor physical facilities such as nuclear power plants or physically dispersed services such as emergency rescue operations. The operator console 1 may also be a control bridge of a ship or other large vehicle. According to the invention, the operators A, B are wearing personal identification devices 9 in the shape of wristbands in the shown example. The control unit 7 is adapted to communicate with the personal identification devices 9 when an operator A is within the control room area 8 as indicated by the arrow 10. Hence, the control unit 7 is adapted to detect the presence of the operators A, B within the control room area 8.

[0022] According to the invention, each personal identification device 9 includes a sensor unit 14 - as shown in Fig. 2 - for monitoring operator data, and is adapted to communicate said operator data to the control unit 7, which is adapted to configure the operator console 1 based on said operator data. The sensor unit 14 includes a non-invasive biometrical sensor for gathering operator data in the form of vital signs and other medical health status parameters. As shown in Fig. 2, the wearable personal identification device 9 includes a radio-frequency identification (RFID) tag 12 and may be shaped as a wrist-

band as shown in the figure, but may alternatively be part of a garment such as a vest (not shown) or be in the form of an ID-card or similar. Accordingly, the control unit 7 preferably includes a radio-frequency identification (RFID) reader 13. The system may be an Active Reader Passive Tag (ARPT) system or an Active Reader Active Tag (ARAT) system. In an alternative embodiment, the control unit 7 may alternatively communicate with the wearable identification devices 9 by way of so called Near Field Communication technology (NFC) or any other short-range wireless communication technology suitable for the communication.

[0023] In order to keep the operators A, B alert and to favourably influence their general long term health status the monitored operator data includes movement pattern data of the operators A, B. Hence, the control unit 7 monitors the physical movement pattern of an operator A, B and automatically raises the desk 2 to a position corresponding to a standing position of the operator A, B when a predetermined time-period of operator inactivity is detected. In this case, the desk 2 and the three information display screens 4a, 4b, 4c are raised accordingly as indicated by the arrows 15a, 15b.

The personal identification device 9 is also adapted to send stored information about the operator's A, B individual qualification levels or job positions to the control unit 7. Based on this information, the control unit 7 may selectively display certain information to certain operators depending on their individual job positions or levels of authorization within the system.

[0024] Another aspect of the automatic configuration system according to the invention is that the control unit 7 is adapted to automatically initiate a noticeable change in light intensity, light temperature, air ventilation, sound level or a combination thereof when the sensed operator data indicates a state of drowsiness of an operator A, B. In such a case, the control unit 7 sends control commands to the various units needed to be controlled in order to achieve the desired effect of a drowsiness alert. These units include the lighting armature 5, an audio system with loudspeakers 16a, 16b, a micro climate unit 17 all of which are adapted for communication with the control unit 7.

[0025] With reference now to Fig. 3a and Fig. 3b, these two figures show a schematic representation of an operator console 1 with three information display screens 4a, 4b, 4c. It should be understood that the operator console 1 may include any number of separate information screens or even a single broad information screen adapted to display separate information display areas corresponding to the separate information screens in the drawings. In Figs. 3a and 3b only one operator A is shown for the sake of clarity and simplicity. According to the invention, the control unit 7 monitors the position of an operator A relative to the operator console 1 and adapts the information interface depending on the operator's A position. In the figures the information interface is divided into three information displays A, B and C. In Fig. 3a the operator

A is in a position closer to display screen 4a than to the two other display screens 4b and 4c. The control unit 7 senses this fact via the wearable personal identification unit 9 worn by operator A and automatically displays the most relevant display interface on the information screen 4a which is located closest to operator A. The inherent relevance of various available display interfaces is stored in the wearable personal identification unit 9 and may depend upon the operator's individual level of training or designated authority within the system as described above.

[0026] In Fig. 3b the operator A has now moved to the right side of the operator console 1 from an original position on the left side as shown in Fig. 3a. In this case the control unit 7 senses the new position of the operator A and automatically moves the display of prioritized information - here information display "A" closer to the sensed position of the operator A from a first information display location 4a located at a first distance d_1 from the operator A to a second information display location 4c located at a second distance d_2 from the operator A, said first distance d_1 exceeding said second distance d_2 . The term display location is here used to further include a wide single display monitor (not shown) on which separate information interfaces A, B, C are displayed. In the shown example, there are three separate information screens 4a, 4b and 4c, although the invention is not limited to such a setup.

[0027] In Fig. 4a the same operator console 1 as in the previous figures 3a and 3b is shown displaying three different information contents ABCD, EFGH and IJKL on the three information screens 4a, 4b and 4c respectively. An operator A is positioned to the left of the operator console 1 near display screen 4a at a first, close distance d_3 from the control unit 7 and the display screen 4a. The information content is here displayed in a first font size suited for optimal readability at the distance d_3 .

[0028] In Fig. 4b, the operator A has moved further away from the operator console 1 at a second, greater distance d_4 from the control unit 7 and the display screen 4a, relative to the shorter distance d_3 in Fig. 4a. The information content on the nearest two information screens 4a, 4b is here displayed in a second, larger font size suited for optimal readability at the distance d_4 . The information content IJKL at the right information screen 4c maintains its first, smaller font size since it is the least prioritized information content for the specific operator A. Again, this prioritization is made by the control unit 7 on the basis of the operator's individual level of training or designated authority within the system as described above. Furthermore, according to the invention, the control unit 7 increases the sound volume for alarms and verbal messages with increased distance between the operator A and the operator console 1.

[0029] According to the invention the personal identification device 9 is adapted to be programmable with individually adapted operator settings including physical dimension configuration for the operator console 1. The

operator settings are communicated to the control unit 7 upon operator log-in to the operator console 1, said control unit 7 controlling the operator console 1 so as to be configured according to the operator settings. The operator settings further include activation settings enabling or not enabling selective automatic configuration functions.

[0030] It is to be understood that the present invention is not limited to the embodiments described above and illustrated in the drawings and a skilled person will recognize that many changes and modifications may be made within the scope of the appended claims. For example, - as mentioned initially - the control unit 7 may alternatively communicate with the wearable identification devices 9 by way of so called Near Field Communication technology (NFC) or any other short-range wireless communication technology suitable for the communication described above.

Claims

1. Automatic configuration system for an operator console (1) wherein one or more operators (A, B) control and monitor physical facilities, operations or physically dispersed services, said system comprising

wearable personal identification devices (9) worn by the operators (A, B) and a control unit (7) for communicating with said wearable personal identification devices (9) in order to detect the presence of said one or more operators (A, B) within a defined control room area (8), **characterized in that** each personal identification device (9) includes a sensor unit (14) for monitoring operator data, and is adapted to communicate said operator data to the control unit (7), and **in that** the control unit (7) is adapted to

configure the operator console (1) based on said operator data,
monitor the position of an operator (A, B) relative to the operator console (1), and adapt the information interface depending on the operator's (A, B) position by automatically moving the display of prioritized information closer to the sensed position of the operator (A) from a first information display location (4a) located at a first distance (d_1) from the operator (A) to a second information display location (4c) located at a second distance (d_2) from the operator (A), said first distance (d_1) exceeding said second distance (d_2).

2. Automatic configuration system for an operator console (1) according to claim 1, wherein the said oper-

ator data includes vital signs and other medical health status parameters.

3. Automatic configuration system for an operator console (1) according to claim 1 or 2, wherein said operator data includes movement pattern data of an operator (A, B).
4. Automatic configuration system for an operator console (1) according to claim 2 or 3, wherein the operator console (1) includes an adjustable height desk (2), wherein said control unit (7) monitors the movement pattern of an operator (A, B) and automatically raises the desk (2) to a position corresponding to a standing position of the operator (A, B) when a predetermined time-period of operator inactivity is detected.
5. Automatic configuration system for an operator console (1) according to any of claims 2 - 3, wherein the control unit (7) automatically initiates a change in light intensity, light temperature, air ventilation, sound level or a combination thereof when the sensed operator data indicates a state of drowsiness of the operator (A, B).
6. Automatic configuration system for an operator console (1) according to any one of claims 1-5, wherein the control console (1) includes two or more separate information display screens (4a, 4b, 4c), and wherein the control unit (7) automatically moves the display of prioritized information for a dedicated operator (A) from a first information display screen (4a) located at a first distance (d_1) from the operator to a second information display screen (4c) located at a second distance (d_2) from the operator (A), said first distance (d_1) exceeding said second distance (d_2).
7. Automatic configuration system for an operator console (1) according to any of claims 1-6, wherein said control unit (7) increases the sound volume for alarms and verbal messages with increased distance between the operator (A, B) and the operator console (1).
8. Automatic configuration system for an operator console (1) according to any of the preceding claims, wherein the personal identification device (9) is adapted to be programmable with individually adapted operator settings including physical dimension configuration for the operator console (1), said operator settings being communicated to the control unit (7) upon operator log-in to the operator console (1), said control unit (7) controlling the operator console (1) so as to be configured according to the operator settings.
9. Automatic configuration system for an operator con-

sole (1) according to any of the preceding claims, wherein said operator settings further include activation settings enabling or not enabling selective automatic configuration functions.

10. Automatic configuration system for an operator console (1) according to any one of the preceding claims, wherein said wearable personal identification device (9) includes a radio-frequency identification (RFID) tag.
11. Automatic configuration system for an operator console (1) according to claim 10, wherein the wearable personal identification device (9) is shaped as a wristband.
12. Automatic configuration system for an operator console (1) according to any one of the preceding claims, wherein said control unit (7) includes a radio-frequency identification, RFID, reader (13).
13. Automatic configuration system for an operator console (1) according to any one of claims 10 to 12, wherein the system is an Active Reader Passive Tag, ARPT, system.
14. Automatic configuration system for an operator console (1) according to any one of claims 10 to 12, wherein the system is an Active Reader Active Tag, ARAT, system.

Patentansprüche

1. Automatisches Konfigurationssystem für eine Bedienungskonsole (1), wobei ein oder mehrere Bediener (A, B) physikalische Einrichtungen, Vorgänge oder physikalisch verteilte Dienstleistungen steuern und überwachen, das System aufweisend von den Bedienern (A, B) getragene tragbare Personenidentifikationsvorrichtungen (9) und eine Steuereinheit (7) zum Kommunizieren mit den tragbaren Personenidentifikationsvorrichtungen (9), um die Anwesenheit des einen oder der mehreren Bediener (A, B) innerhalb eines definierten Steuer-raumbereichs (8) zu erfassen, **dadurch gekennzeichnet, dass** jede Personenidentifikationsvorrichtung (9) eine Sensoreinheit (14) zum Überwachen von Bedienerdaten aufweist, und dafür ausgelegt ist, die Bedienerdaten zur Steuereinheit (7) zu übermitteln, und dass die Steuereinheit (7) dafür ausgelegt ist

die Bedienungskonsole (1) basierend auf den Bedienerdaten zu konfigurieren, die Position eines Bedieners (A, B) in Bezug auf die Bedienungskonsole (1) zu überwachen, und

die Bedienerschnittstelle abhängig von der Position des Bedieners (A, B) durch automatisches Bewegen der Anzeige priorisierter Informationen näher zur erfassten Position des Bedieners (A) von einem ersten Informationsanzeigort (4a), die in einem ersten Abstand (d_1) vom Bediener (A) angeordnet ist, zu einem zweiten Informationsanzeigort (4c), die in einem zweiten Abstand (d_2) vom Bediener (A) angeordnet ist, wobei der erste Abstand (d_1) größer ist, als der zweite Abstand (d_2), anzupassen.

2. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach Anspruch 1, wobei die Bedienerdaten Vitalfunktionen und andere medizinische Gesundheitszustandsparameter aufweisen.
3. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach Anspruch 1 oder 2, wobei die Bedienerdaten Bewegungsmusterdaten eines Bedieners (A, B) aufweisen.
4. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach Anspruch 2 oder 3, wobei die Bedienungskonsole (1) ein höhenverstellbares Pult (2) aufweisen, wobei die Steuereinheit (7) das Bewegungsmuster eines Bedieners (A, B) überwacht und das Pult (2) automatisch auf eine Position entsprechend einer stehenden Position des Bedieners (A, B) anhebt, wenn ein vorher festgelegter Zeitraum von Bedienerinaktivität erkannt wird.
5. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der Ansprüche 2 - 3, wobei die Steuereinheit (7) automatisch eine Änderung der Lichtintensität, der Lichttemperatur, der Belüftung, des Schallpegels oder einer Kombination davon einleitet, wenn die erfassten Bedienerdaten einen schläfrigen Zustand des Bedieners (A, B) anzeigen.
6. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der Ansprüche 1 - 5, wobei die Steuerkonsole (1) zwei oder mehr getrennte Informationsanzeigebildschirme (4a, 4b, 4c) aufweist, und wobei die Steuereinheit (7) automatisch die Anzeige priorisierter Informationen für einen fest zugeordneten Bediener (A) von einem ersten Informationsanzeigebildschirm (4a), der in einem ersten Abstand (d_1) vom Bediener angeordnet ist, zu einem zweiten Informationsanzeigebildschirm (4c), der in einem zweiten Abstand (d_2) vom Bediener (A) angeordnet ist, bewegt, wobei der erste Abstand (d_1) größer ist, als der zweite Abstand (d_2).
7. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der Ansprüche 1 - 6, wobei die Steuereinheit (7) die Lautstärke für Alar-

me und Sprachmitteilungen mit erhöhtem Abstand zwischen dem Bediener (A, B) und der Bedienungskonsole (1) erhöht.

8. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der vorstehenden Ansprüche, wobei die Personenidentifikationsvorrichtung (9) dafür ausgelegt ist, mit individuell angepassten Bedieneinstellungen aufweisend physikalische Abmessungskonfiguration für die Bedienungskonsole (1) programmierbar zu sein, wobei die Bedieneinstellungen beim Anmelden des Bedieners an der Bedienungskonsole (1) zur Steuereinheit (7) übertragen werden, wobei die Steuereinheit (7) die Bedienungskonsole (1) derart steuert, dass diese im Einklang mit den Bedieneinstellungen konfiguriert wird. 5
9. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der vorstehenden Ansprüche, wobei die Bedieneinstellungen ferner Aktivierungseinstellungen aufweisen, welche auswählende automatische Konfigurationsfunktionen freigeben oder nicht freigeben. 10
10. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der vorstehenden Ansprüche, wobei die tragbare Personenidentifikationsvorrichtung (9) ein Radiofrequenz-Identifikations- (RFID-) Etikett aufweist. 15
11. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach Anspruch 10, wobei die tragbare Personenidentifikationsvorrichtung (9) als ein Armband geformt ist. 20
12. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der vorstehenden Ansprüche, wobei die Steuereinheit (7) ein Radiofrequenz-Identifikations- (RFID-) Lesegerät (13) aufweist. 25
13. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der Ansprüche 10 bis 12, wobei das System ein System mit aktivem Lesegerät und passivem Etikett, ARPT, ist. 30
14. Automatisches Konfigurationssystem für eine Bedienungskonsole (1) nach einem der Ansprüche 10 bis 12, wobei das System ein System mit aktivem Lesegerät und aktivem Etikett, ARAT, ist. 35

Revendications

1. Système de configuration automatique pour un pupitre (1) d'opérateur, un ou plusieurs opérateurs (A, B) commandant et surveillant des installations phy-

siques, des opérations ou des services physiquement dispersés, ledit système comprenant des dispositifs d'identification personnelle portables (9) portés par les opérateurs (A, B) et une unité de commande (7) destinée à communiquer avec lesdits dispositifs d'identification personnelle portables (9) dans le but de détecter la présence desdits un ou plusieurs opérateurs (A, B) au sein d'une zone définie (8) de salle de commande, **caractérisé en ce que** chaque dispositif d'identification personnelle (9) comporte une unité capteur (14) destinée à surveiller des données d'opérateur, et est adapté à communiquer lesdites données d'opérateur à l'unité de commande (7), et **en ce que** l'unité de commande (7) est adaptée à

configurer le pupitre (1) d'opérateur sur la base desdites données d'opérateur, surveiller la position d'un opérateur (A, B) par rapport au pupitre (1) d'opérateur, et adapter l'interface d'informations en fonction de la position de l'opérateur (A, B) en rapprochant automatiquement l'affichage d'informations priorisées de la position détectée de l'opérateur (A) depuis un premier emplacement d'affichage d'informations (4a) situé à une première distance (d_1) de l'opérateur (A) jusqu'à un deuxième emplacement d'affichage d'informations (4c) situé à une deuxième distance (d_2) de l'opérateur (A), ladite première distance (d_1) étant supérieure à ladite deuxième distance (d_2).

2. Système de configuration automatique pour un pupitre (1) d'opérateur selon la revendication 1, dans lequel lesdites données d'opérateur comportent des signes vitaux et d'autres paramètres médicaux d'état de santé. 40
3. Système de configuration automatique pour un pupitre (1) d'opérateur selon la revendication 1 ou 2, dans lequel lesdites données d'opérateur comportent des données de type de mouvement d'un opérateur (A, B). 45
4. Système de configuration automatique pour un pupitre (1) d'opérateur selon la revendication 2 ou 3, dans lequel le pupitre (1) d'opérateur comporte un bureau réglable en hauteur (2), ladite unité de commande (7) surveillant le type de mouvement d'un opérateur (A, B) et relevant automatiquement le bureau (2) jusqu'à une position correspondant à une position debout de l'opérateur (A, B) lorsqu'une période de temps prédéterminée d'inactivité d'opérateur est détectée. 50
5. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des re-

- vendications 2 et 3, dans lequel l'unité de commande (7) déclenche automatiquement un changement d'intensité de la lumière, de température de la lumière, de ventilation de l'air, de niveau sonore ou d'une combinaison de ceux-ci lorsque les données d'opérateur détectées indiquent un état de somnolence de l'opérateur (A, B).
6. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications 1 à 5, dans lequel le pupitre de commande (1) comporte au moins deux écrans d'affichage d'informations distincts (4a, 4b, 4c), et dans lequel l'unité de commande (7) transfère automatiquement l'affichage d'informations priorisées pour un opérateur dédié (A) depuis un premier écran d'affichage d'informations (4a) situé à une première distance (d_1) de l'opérateur jusqu'à un deuxième écran d'affichage d'informations (4c) situé à une deuxième distance (d_2) de l'opérateur (A), ladite première distance (d_1) étant supérieure à ladite deuxième distance (d_2). 5 10 15 20
 7. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications 1 à 6, dans lequel ladite unité de commande (7) accroît le volume sonore pour des alarmes et des messages verbaux en fonction d'une distance croissante entre l'opérateur (A, B) et le pupitre (1) d'opérateur. 25 30
 8. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications précédentes, dans lequel le dispositif d'identification personnelle (9) est adapté à être programmable à l'aide de réglages d'opérateur individuellement adaptés comportant une configuration de dimensions physiques pour le pupitre (1) d'opérateur, lesdits réglages d'opérateur étant communiqués à l'unité de commande (7) lors d'une ouverture de session d'opérateur avec le pupitre (1) d'opérateur, ladite unité de commande (7) commandant le pupitre (1) d'opérateur de manière à le configurer selon les réglages d'opérateur. 35 40 45
 9. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications précédentes, dans lequel lesdits réglages d'opérateur comportent en outre des réglages d'activation qui activent ou n'activent pas des fonctions sélectives de configuration automatique. 50
 10. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications précédentes, dans lequel ledit dispositif d'identification personnelle portable (9) comporte une étiquette d'identification radiofréquence (RFID). 55
 11. Système de configuration automatique pour un pupitre (1) d'opérateur selon la revendication 10, dans lequel le dispositif d'identification personnelle portable (9) prend la forme d'un bracelet.
 12. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications précédentes, dans lequel ladite unité de commande (7) comporte un lecteur d'identification radiofréquence, RFID, (13).
 13. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications 10 à 12, lequel système est un système à lecteur actif et étiquettes passives, ARPT.
 14. Système de configuration automatique pour un pupitre (1) d'opérateur selon l'une quelconque des revendications 10 à 12, lequel système est un système à lecteur actif et étiquettes actives, ARAT.

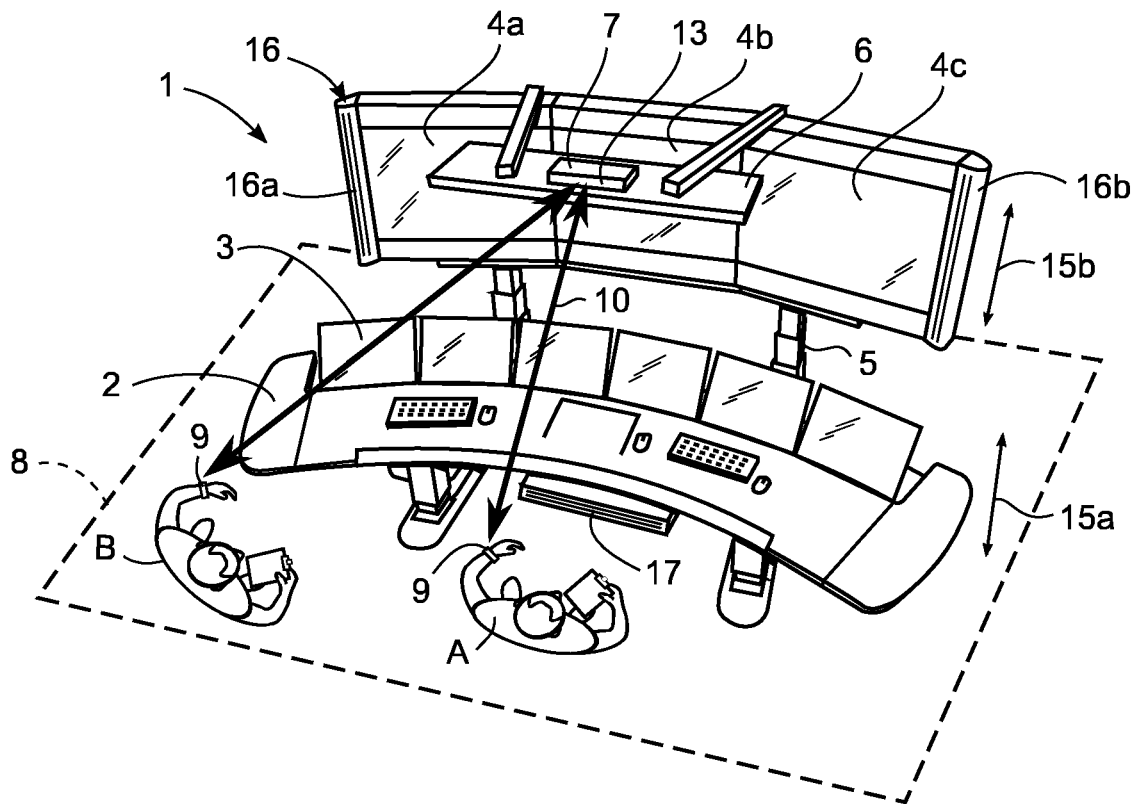


FIG. 1

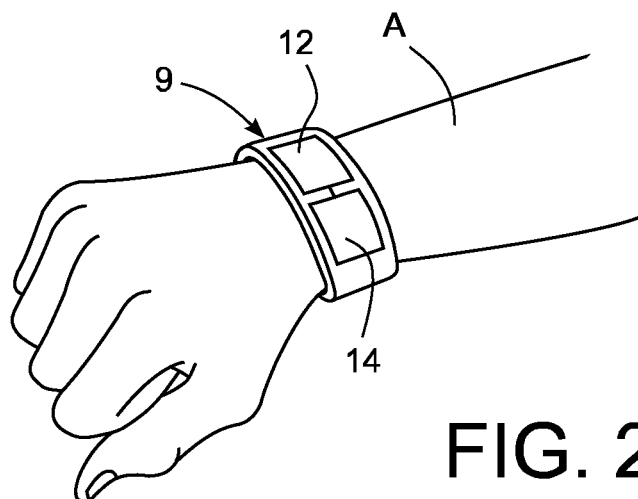
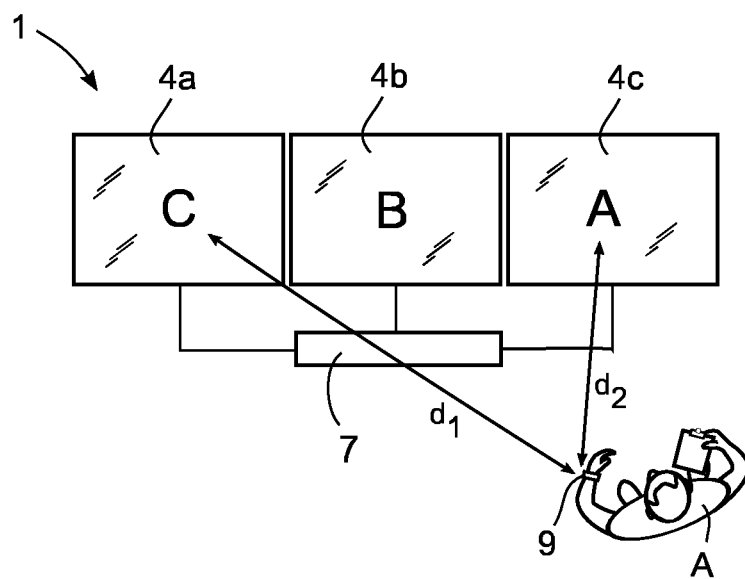
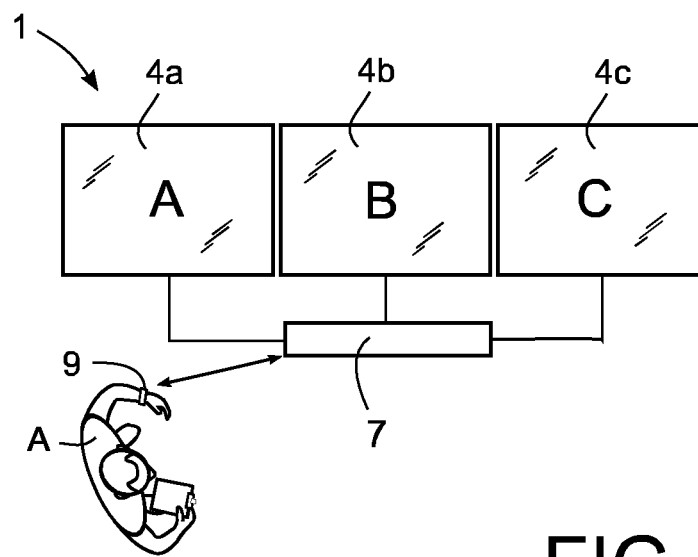


FIG. 2



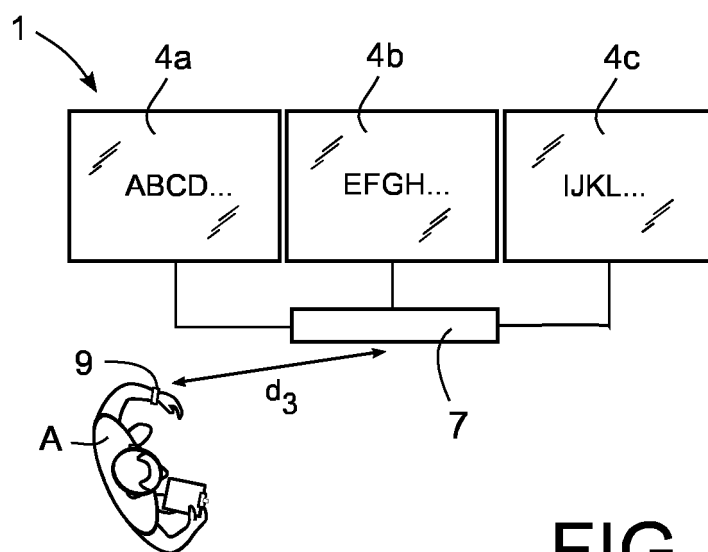


FIG. 4a

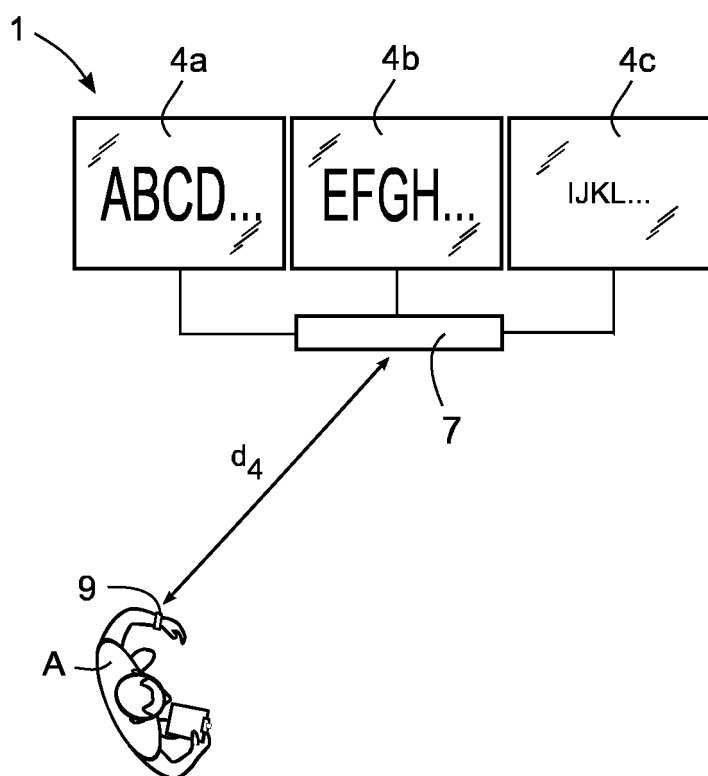


FIG. 4b

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- WO 2012171032 A2 [0004]
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专利名称(译)	操作员控制台的自动配置系统		
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[标]申请(专利权)人(译)	瑞典通用電器勃朗勃威力公司		
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优先权	1430175 2014-12-19 SE		
其他公开文献	EP3234752A1		
外部链接	Espacenet		

摘要(译)

一种用于操作员控制台的自动配置系统，其中一个或多个操作员控制和监视物理设施，操作或物理上分散的服务。该系统包括由操作者佩戴的可穿戴个人识别装置和用于与可穿戴个人识别装置通信的控制单元，以便检测在限定的控制室区域内的一个或多个操作员的存在。每个个人识别装置包括用于监视操作员数据的传感器单元，并且适于将操作员数据传送到控制单元，控制单元适于基于操作员数据配置操作员控制台。

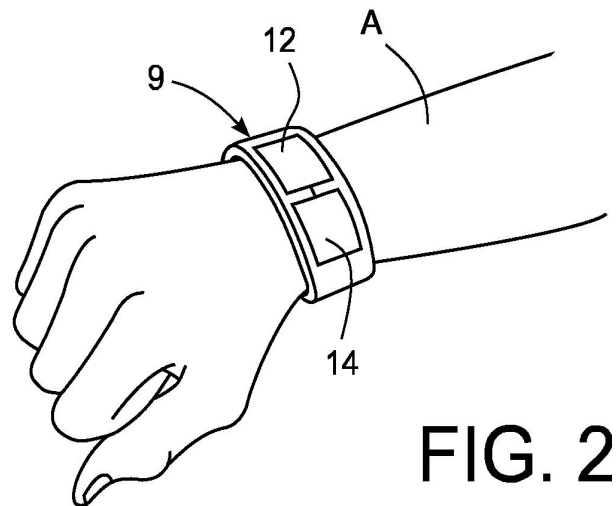


FIG. 2