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System and method to provide safety zones in a virtual workplace

Abstract

The present disclosure describes guardians for an enterprise that enable the enterprise to provide safety zones for users in a virtual workplace. An admin of the enterprise provides headsets to the users, who are required to take part in business activities. The admin utilizes an admin headset having an admin guardian to create the guardian for each of the users. The admin preconfigures an experience with each of the guardians for the headsets that are to be provisioned. After the experience with each of the guardians is preconfigured, the admin guardian informs the admin a size of a room to account for, number of headsets and the type of the experience set by the admin. The admin informs the users the size of the room that is required for the experience, and provides the headsets to the users. As the user enters in the virtual workplace, the guardian ensures that the user remains in his/her safety zone and the preconfigured posture. Thereafter, the guardian lets the user inside the business activity. As the user enters the business activity, the guardian launches a passthrough mode. The user can see visually in the passthrough mode whether his/her safety zone overlaps with the safety zones of the other participants. The experience will stop if there is an overlap between the safety zones. In case of the overlap, the user needs to move away to a safer distance to get into the experience again.

Problem statement

A virtual workplace provides a platform for employees of an enterprise to undertake group business activities despite the employees being at different remote places. However, it has been difficult to determine surroundings of each employee in the virtual workplace, and thus there has been a risk of the employee coming in contact with other objects or colliding with other employees.

The present disclosure proposes a novel solution to address the aforementioned problem.

System and working

The present disclosure describes guardians for an enterprise that enable the enterprise to provide safety zones for users in a virtual workplace. An admin of the enterprise provides headsets to the users who are required to take part in business activities, such as, meetings, trainings, etc. The admin utilizes an admin

headset having an admin guardian to create the guardian for each of the users. The admin preconfigures an experience with each of the guardians for the headsets that are to be provisioned. For preconfiguring the experience with each of the guardians, the admin first wears the admin headset, turns the admin headset on, and enters into a virtual environment. In the virtual environment, the admin utilizes a controller to select number of headsets that need to be provisioned on a virtual screen (shown in Figure 1). The admin further selects a mode of the experience that is to be provided in each of the headsets. Thereafter, the admin sets a default guardian size (i.e. a radius of each of the safety zones). For example, the default guardian's radius is 2m.

The admin furthermore sets a type of the experience. For example, the type of experience is a seated posture. The seated posture is sometimes essential to ensure safety.

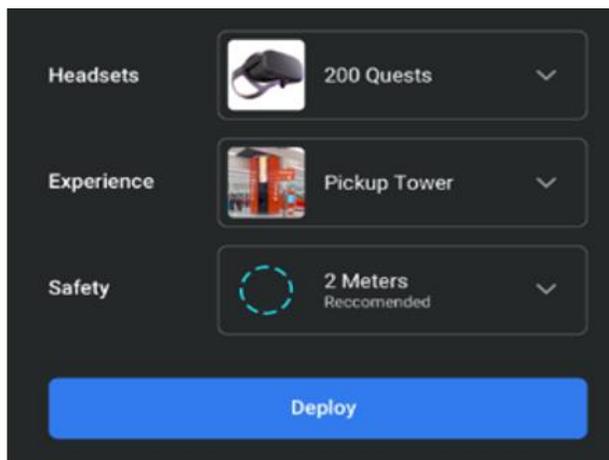


Figure 1: Deploying the headsets

After setting the type of the experience, the admin utilizes the controller to draw a boundary of a master area within which the safety zones need to be created in the virtual environment (as shown in Figure 2(a)). The admin then selects a number of safety zones that are to be created within the boundary (as shown in Figure 2(b)). First safety zone is created, where the admin initially points using the controller (as shown in Figure 2(c)). The admin creates additional safety zones as many as required next to the first safety zone (as shown in Figure 2(d)). However, a position and a number of the additional safety zones are restricted

based on the position and the number of the safety zones that have already been created. After the safety zones are created, the admin guardian informs the admin a size of a room to account for, the number of headsets and the type of the experience set by the admin.

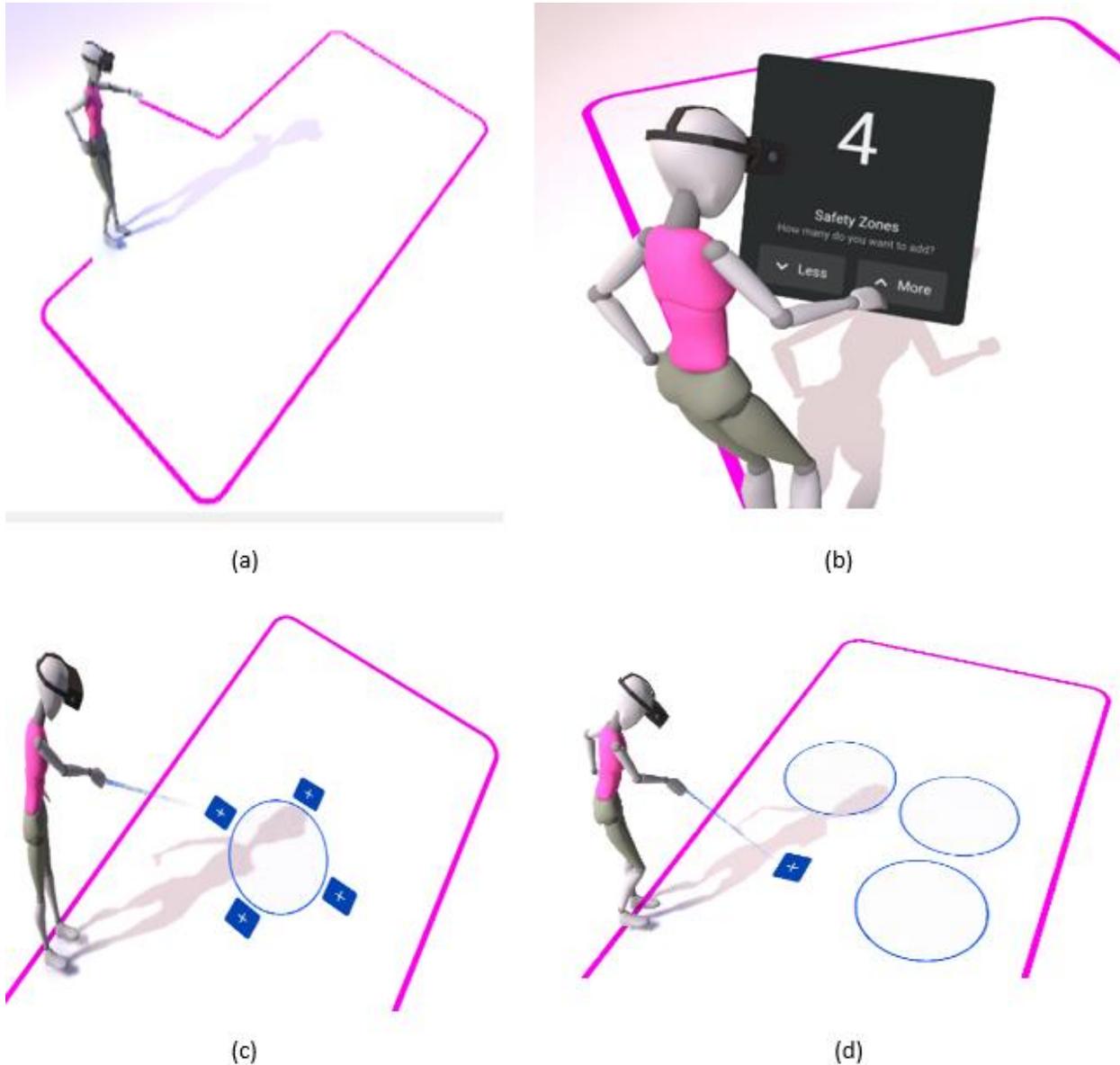


Figure 2: Creation of the safety zones

Thereafter, the admin informs the users the size of the room that is required for the experience and provides the headsets to the users.

As the user puts the headset and turns the headset on, a circular ring (shown in Figure 3(a)) of the radius equal to the default guardian size appears around him/her and the virtual screen (shown in Figure 3(b)) pops up in front of the user. The virtual screen instructs the user to look around and make sure that the user's safety zone within the circular ring is clear. If the safety zone is not clear, the user is required to move to a safer place.

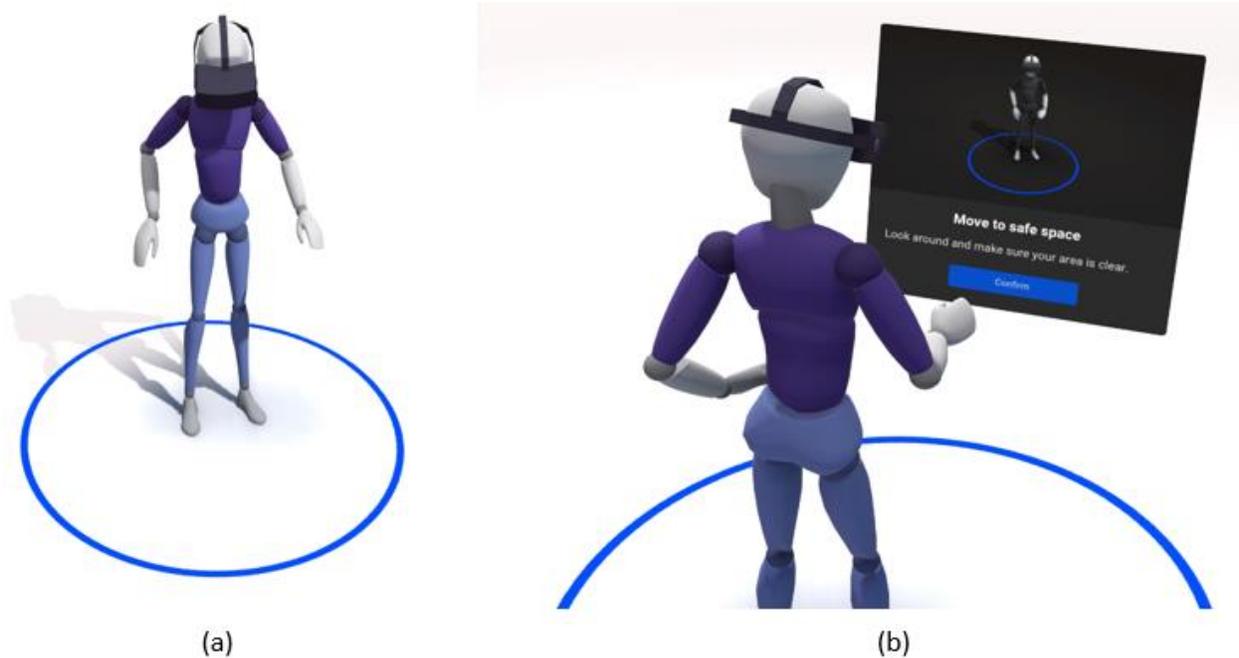


Figure 3: (a) The circular ring (b) The virtual screen

As the user confirms his/her presence in the safer place, the guardian recognizes a posture of the user (i.e. whether the user is standing or seated), as shown in Figure 4(a). If the user is standing, the virtual screen instructs the person to sit down (as shown in Figure 4(b)), since the admin has set the type of the experience to the seated posture.



Figure 4: (a) Recognition of the posture (b) The instruction to enforce the preconfigured posture

As the guardian detects the seated posture (as shown in Figure 5(a)), the guardian lets the user inside the business activity within the virtual workplace (as shown in Figure 5(b)). The circular ring is still visible to the user to remind the user where his/her boundary is.

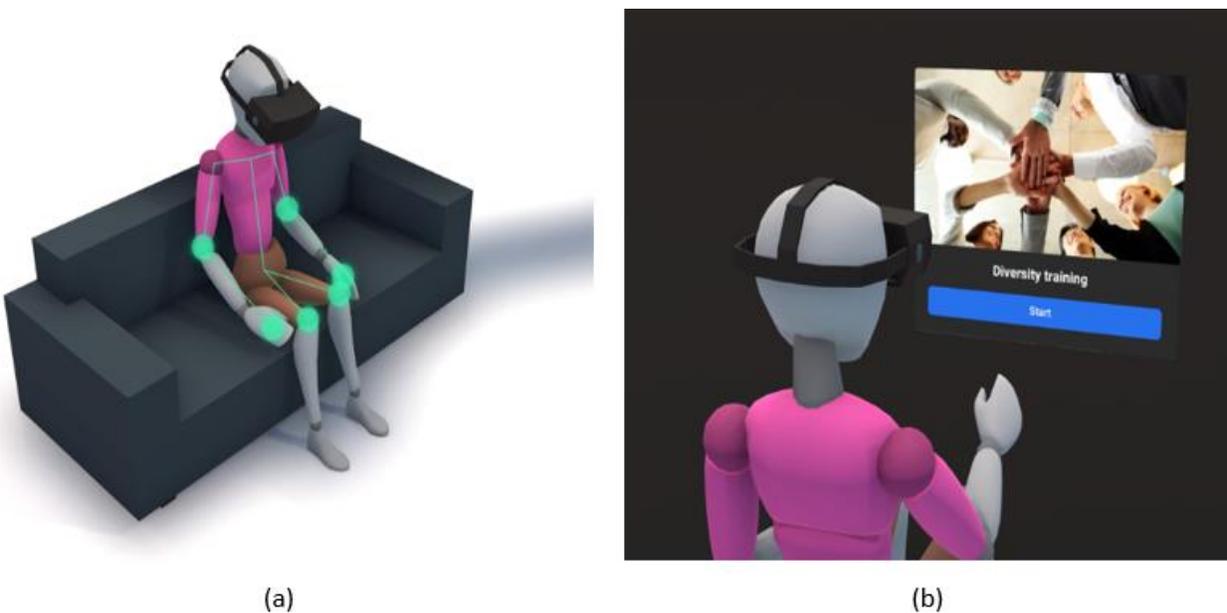


Figure 5: (a) Seated posture (b) Access to the business activity

As the user enters the business activity, the guardian launches a passthrough mode (as shown in Figure 6). In the passthrough mode, the user still feels a part of the room, and thus feels comfortable after entering the business activity. The user feels himself at a table with other participants who are about to take part in the business activity. The user sees avatars of the other participants who are attending the business activity. This also allows for interactions to happen amongst the participants without taking off the headset. Further, the user can see his own safety zone and as well as the safety zones of the other participants in the passthrough mode. The user can see visually in the passthrough mode whether his safety zone overlaps with the safety zones of the other participants. The experience will stop, if there is an overlap between the safety zones. In case of the overlap, the user needs to move away to a safer distance to get into the experience again.

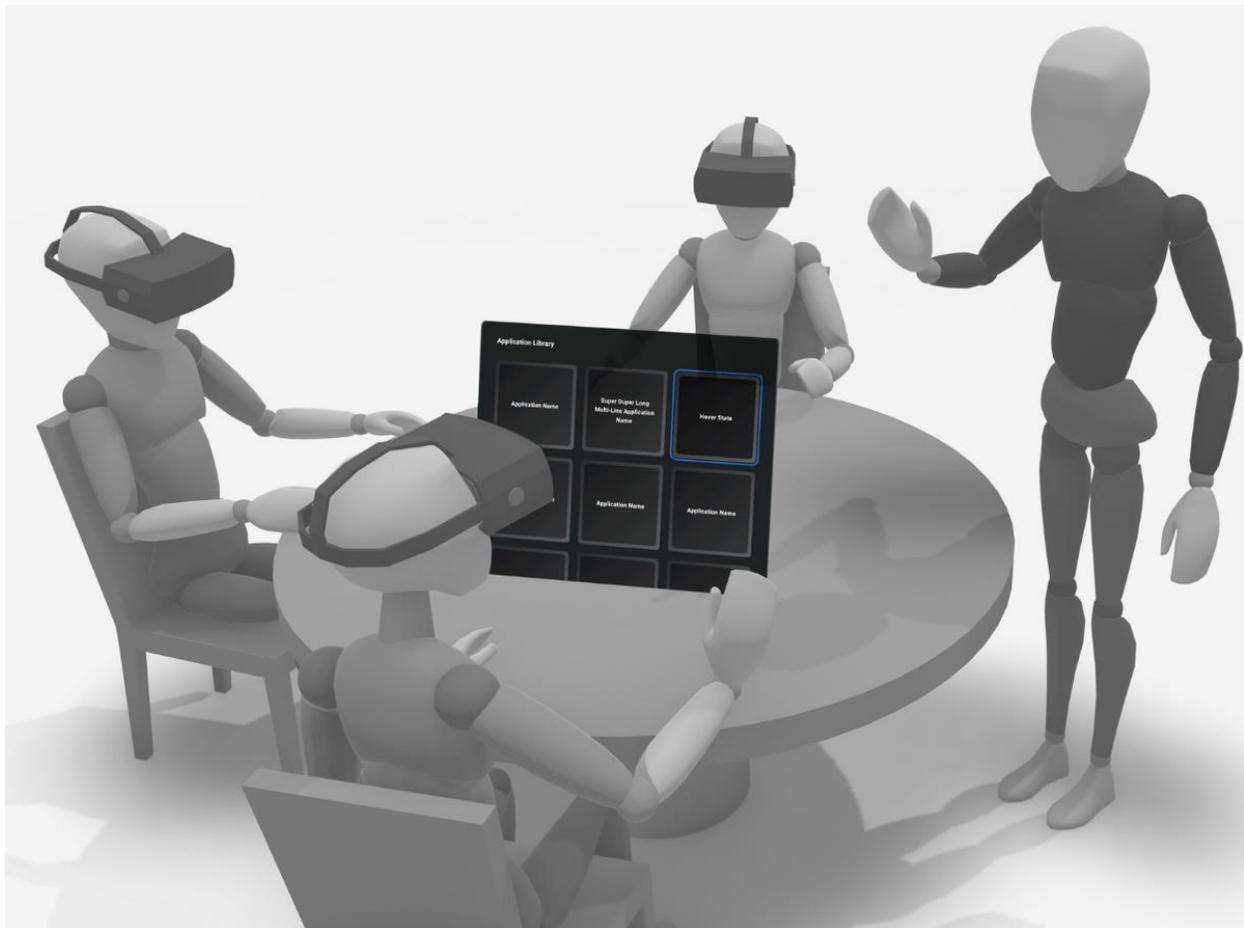


Figure 6: The business activity initiated in the passthrough mode

Additional embodiments

In an additional embodiment, the admin sets the type of the experience to a standing posture. The standing posture requires more space for the users to be able to move around. However, if the type of experience is set to the standing posture, the guardian need not recognize the posture of the user before the business activity is started.

In another embodiment, the admin may preconfigure a location of the headsets. In one example, the admin may preconfigure the headsets to be used only at an on-site location (i.e. within premises of the enterprise), as shown in Figure 7. In another example, the admin may preconfigure the headsets to be used at an offsite location. This allows the users to checkout the headsets to take home with them.

The screenshot shows a web interface for configuring devices. At the top, there is a 'Devices' header with a blue 'Deploy All Changes' button. Below the header are three tabs: 'Hardware', 'Software', and 'Device Groups', with 'Device Groups' being the active tab. The main content area is titled 'Seattle Device Group' and shows '200 Devices'. Under the 'Location' section, there are two radio button options: 'On-site' (selected) and 'Offsite'. Under the 'Experience Type' section, there are two radio button options: 'Seated' (selected) and 'Standing'.

Figure 7: Preconfiguring a location and the type of the experience

In yet another embodiment, the admin may set different types of the experiences corresponding to different modes selected by the admin (as shown in Figure 8). For example, the admin may set the type of the experience to the seated posture corresponding to a “pickup tower” mode and a “diversity” mode. Further, the admin may set the type of the experience to “active” corresponding to an “active shooter” mode.

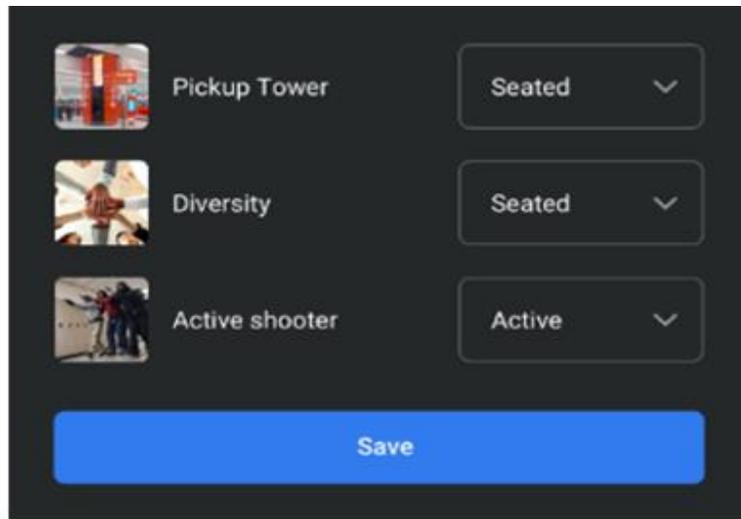


Figure 8: Different types of experiences for different modes

In yet another embodiment, the safety zones are drawn automatically based on volume of space outlined in the master area by the admin. Based on the volume of the space outlined in the master area, the admin guardian shows the admin the number of safety zones that this space will support with the default guardian size on the virtual screen (as shown in Figure 9).

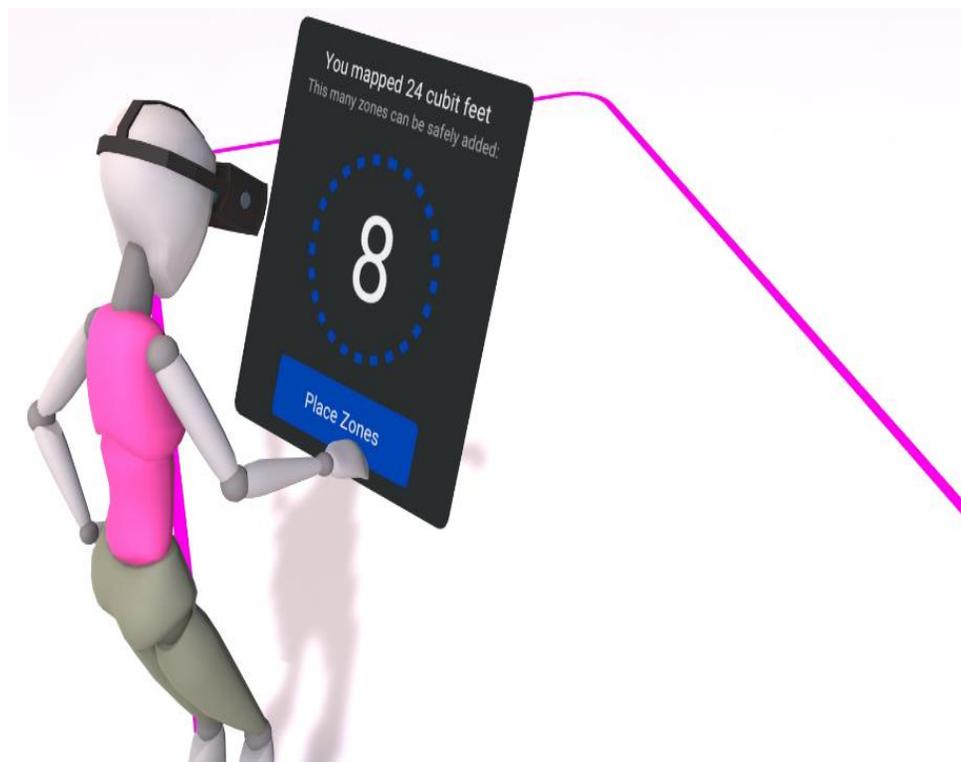


Figure 9: The number of safety zones supported by the master area

As the admin presses a “Place Zones” button on the virtual screen, the safety zones automatically position themselves in most optimal placement within the boundary (as shown in Figure 10).

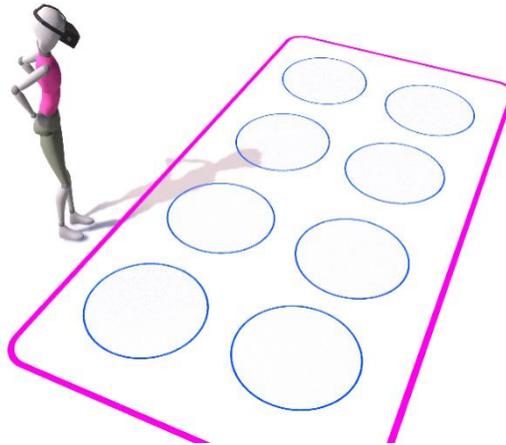


Figure 10: Optimal placement of the safety zones

The admin guardian further informs the admin the size of the room to account for the number of headsets and the type of the experience required (as shown in Figure 11).

Devices Deploy All Changes

Hardware Software **Device Groups**

Seattle Device Group
200 Devices

Location
Where will these devices be used?

On-site
We will distribute and retain the devices for use in one location.

Offsite
Users will checkout the devices to take home with them.

Experience Type
Where will these devices be used?

Seated
This app experience is best optimized for a stationary position. (2 meter radius)

Standing
This experience requires more space for users to be able to move around.

Based on the number of headsets in this group and the experience type, we recommend using a room with the minimum size of:

4,300 sf

Figure 11: The size of the room based on the number of headsets and the type of the experience

In yet another embodiment, the admin creates and preconfigures the guardian only once, and shares the guardian to all the headsets via bluetooth, or Wi-Fi etc.

In yet another embodiment, the admin preconfigures the type of the experience to the seated posture but provides a flexibility in the posture if the safety is not a concern in a particular experience. It essentially means that the type of the experience is the seated posture by default, but automatically changes with the posture of the user (for example, when the user stands up).

In yet another embodiment, aspects of the present disclosure may be utilized in a multi-player virtual reality (VR) gaming environment. In the multi-player VR gaming environment, a player can see his own safety zone and as well as the safety zones of other players. This enables the player to remain at a safe distance from the other players to stop bombing into the other players.

Conclusion

With the advancement in virtual reality, virtualization has been revolutionized. Be it gaming, education, trainings, healthcare, business meetings, and what not, the virtualization has enhanced the user experience to great levels. For example, to conduct the business meetings, a virtual workplace provides a platform where employees can virtually meet, collaborate effectively and feel truly together despite being at remote places. But there are some challenges associated with these virtual workplaces, for example, the employee may come in contact with other objects or collide with other employees, if necessary safeguards are not ensured. The present disclosure addresses these challenges by employing guardians that ensure safety by giving a sense of being protected to the employees in real time. The guardian significantly reduces a risk of object contact and stops people from colliding with each other when close. Further, it is very easy for the employee to set up the guardian in the headset before entering into the virtual workplace.