3M Fall Protection Harness Inspection VR – VIVE

July 2018

General Instructions

1. VIVE headset wearing instructions: Loosen the Velcro on the side straps so that the headset can be adjusted to fit comfortably.
   - Place the headset on the user and adjust the Velcro.
   - If the user is wearing glasses, place the user's glasses on the inside of the HTC VIVE and then put the headset on over them.

2. Always ask the user if they are comfortable and if they can see properly. If they cannot, tell them to adjust the headset up or down until they can see clearly.

3. Once the user has adjusted the headset, the person in charge of the experience must never try to adjust the headset on the user from the outside since this could make the user dizzy and the experience unpleasant.

4. Place your hands, while holding the controllers, in front of the headset and observe which hand is right and which is left on the display monitor.

5. Instruct the user to stretch out their arms and make fists with their hands to insert the safety straps of the controllers. Insert one hand at a time. Adjust the straps so that their hands are secure.

6. Check that the user's hands are correctly placed on the controllers.

7. Tell the user that they can move in any direction, keeping in mind that there are some visible limits in the play area. These borders appear as blue grids and should not be crossed because they indicate the physical limits of the play area.

8. The user must stand in the start position (circle that appears) with their feet toward the display screen.

9. Never lose sight of the user in the experience, paying special attention to the cable and their feet.

10. The person helping the user must stand behind them to avoid being unintentionally hit by the user.

Keyboard Commands

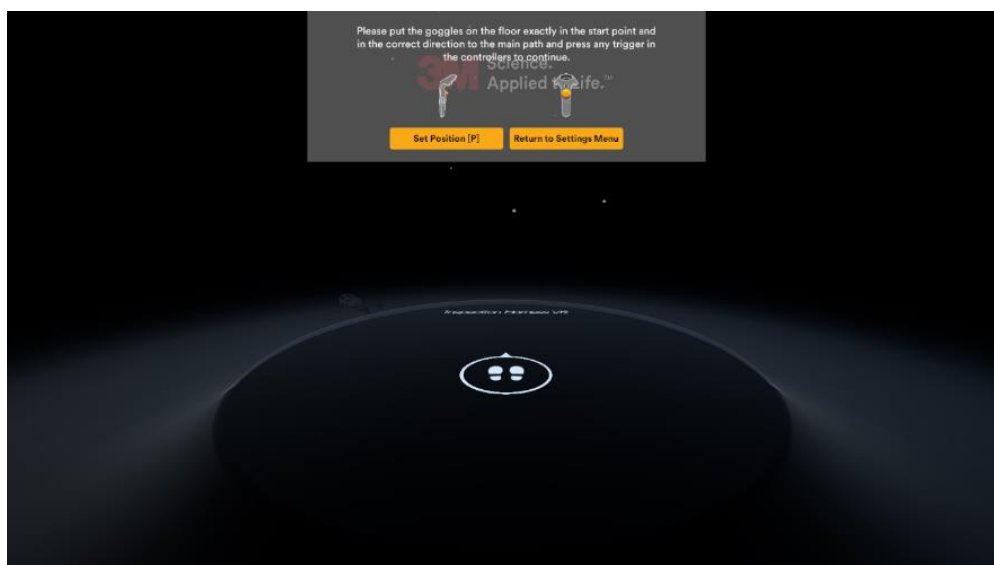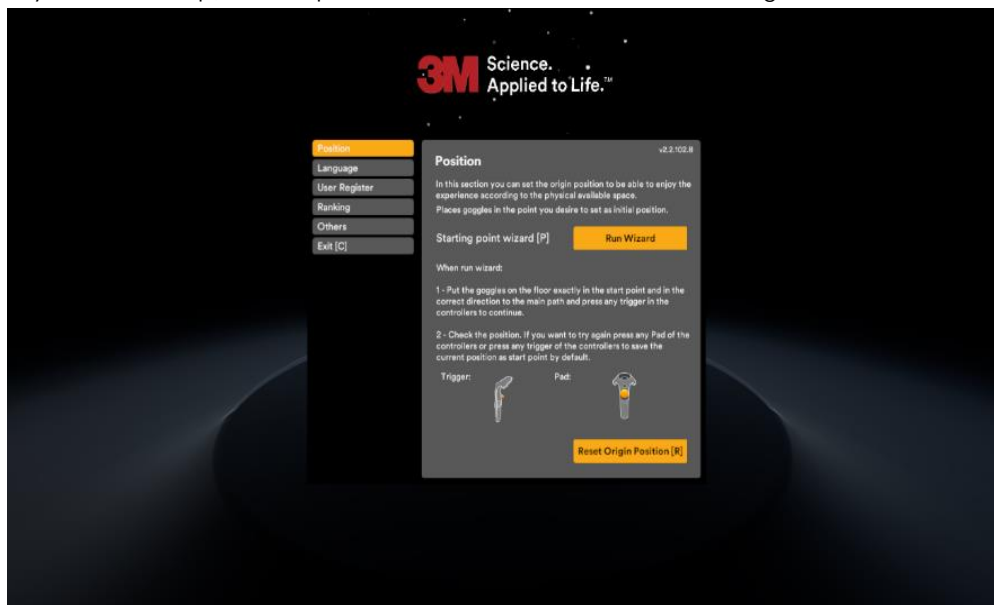| Key	Command
C	Settings menu
B	Restart scene (back)
N	Skip to the next scene (next)
R	Start/Stop video recording
V	Change point of view (1st or 3rd person)
ESC	Exit the application

Initial setup and general preferences of the application

1. Settings menu

Using the C key, you will access the settings menu and general preferences of the application, which will allow you to set up how the application will run and establish the default values of features that can be customized by the staff in charge of managing the VR experience.
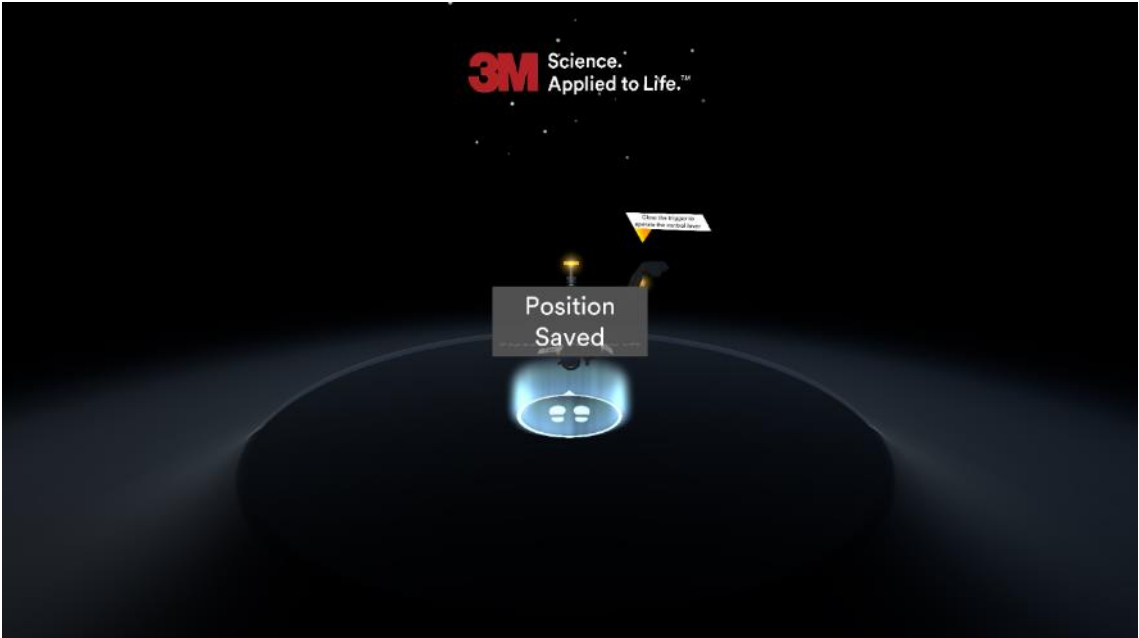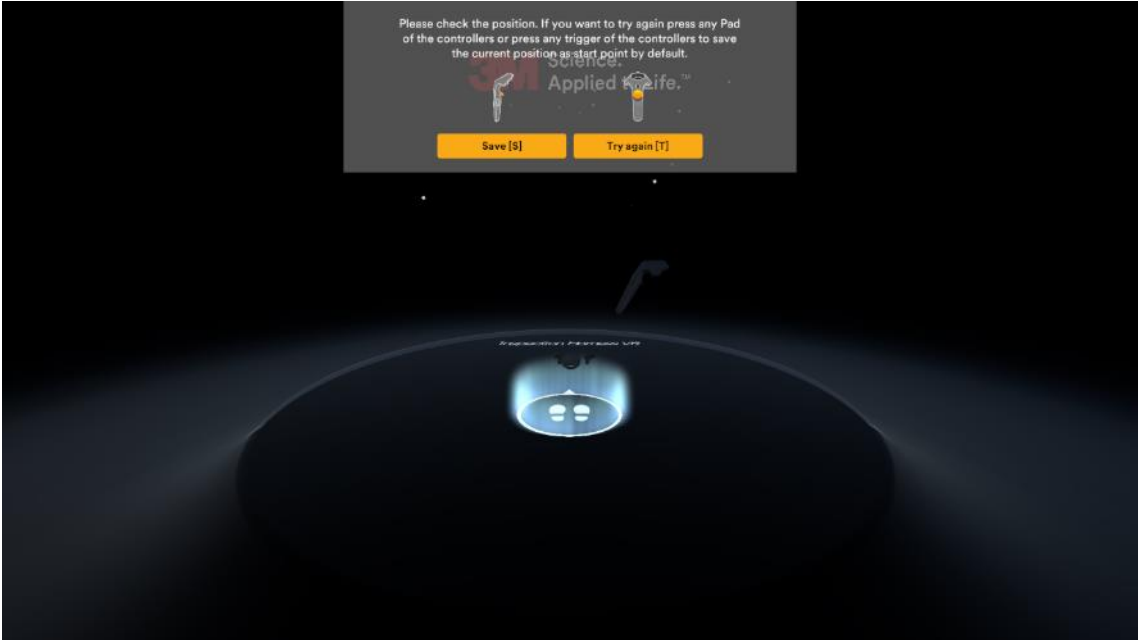
2. Initial position (*Very Important*)

Under this option, the system will allow you to establish the best starting point for the physical setup in terms of both the position and rotation of the space so that the user is optimally positioned.

If you have problem with the starting position or the system does not detect that the user is standing in the starting position, please press R to reset the origin position and set the starting point again by using the Starting Point Wizard

If you need help, the steps to do this are listed on the settings screen:

Please check the position. If you want to try again press any Pad of the controllers or press any trigger of the controllers to save the current position as start point by default.

Save [S]   Try again [T]

Position Saved

3. Language

The application has been developed with a multilingual interface, which means you can set the default language and choose whether or not you want the user (customer) to be able to choose the language at the beginning of the experience.

4. User Registration

The system allows the user to register their name and email on the application using a virtual keyboard within the experience so that they can receive an email with their results. This registration feature is optional and can be activated or deactivated depending on how the application will be used at a particular time. For instance, to record each user's results of a training module, they should register their name and email. Also, see Ranking.

5. **Ranking**

If you have activated the "User Registration" feature then, at the end of the experience, the application will show a leaderboard that ranks users who have completed the experience by detecting the four randomized simulated damages in the shortest amount of time.

This option is customizable and can be activated or deactivated depending on what the experience will be used for.

The results and best times are locally stored until the "reset" button is pressed, which will clear the list and restart the ranking from scratch.
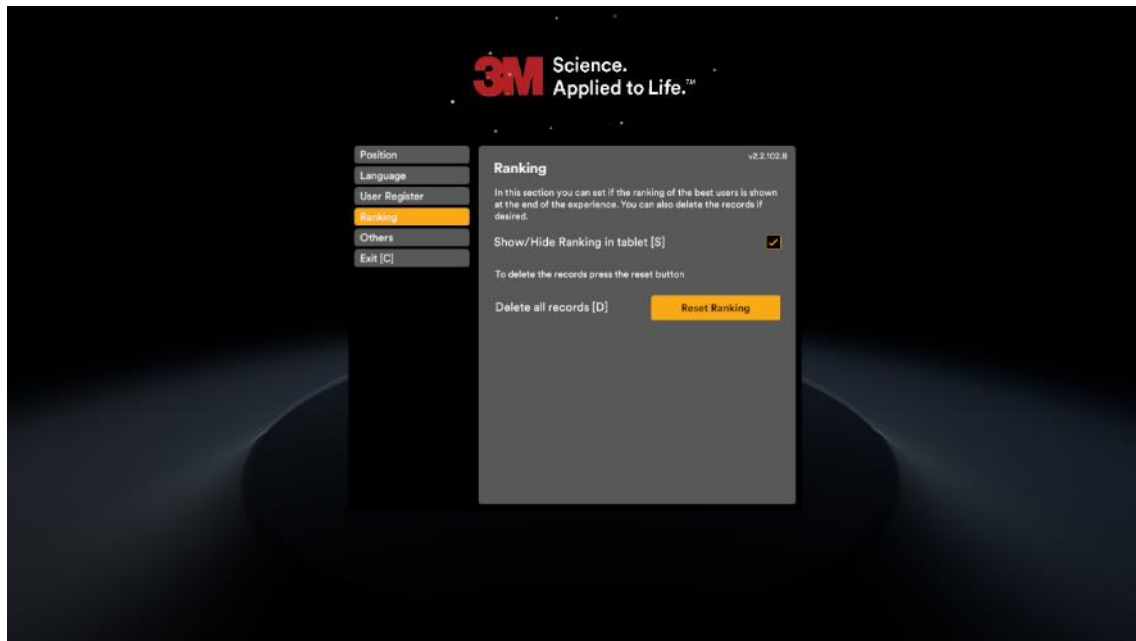
6. Other

6.1. External camera: Determines whether third-person view will be used by default.

6.2. Battery warning: If you are using a portable device, it is very important to have it connected to a power source at all times so that the application always runs at maximum performance. Failure to do so will result in the activation of energy saving settings that may reduce the level of performance of the experience and the image could jump, causing the user to get dizzy, etc. The system will alert the user if it detects that the device is not connected to a power source or for any other similar performance issue. Given the wide range of devices, not all computer hardware supports this feature so it can be deactivated if it is incompatible.

6.3. Tutorial: The system includes a brief tutorial demonstrating the main controller commands and when to use each one so that the user can adapt to the new VR environment and learn how to operate the controller for the various activities required during the experience. This option can be activated or deactivated by default and can be skipped at any time by pressing the N key on the computer's keyboard.
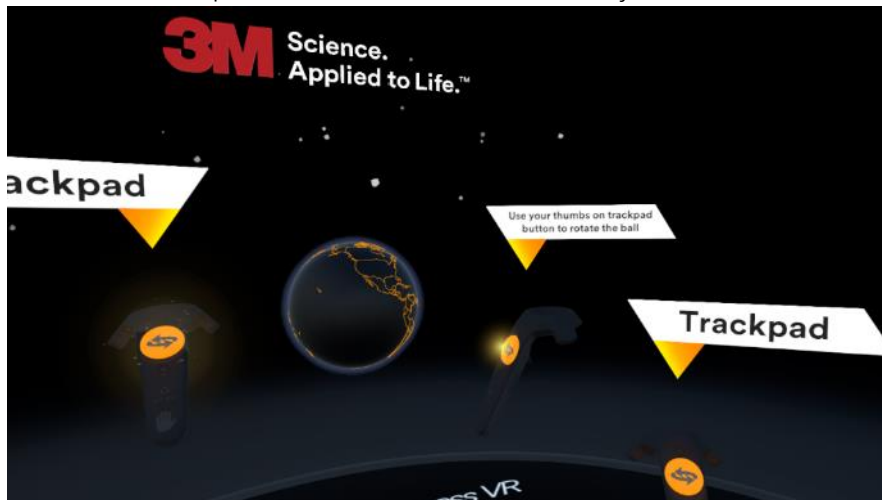
Experience Harness Inspection VR Training

At the beginning of the experience, a tutorial is presented to show the user how to use the VR controllers.
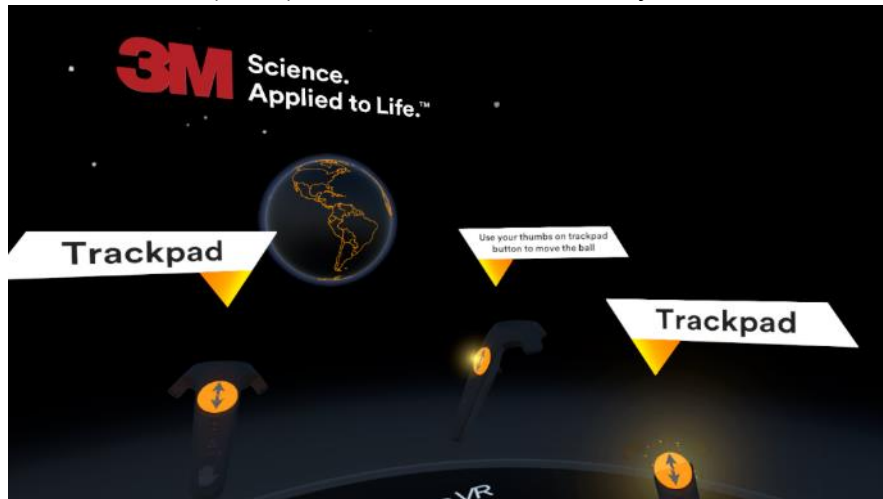
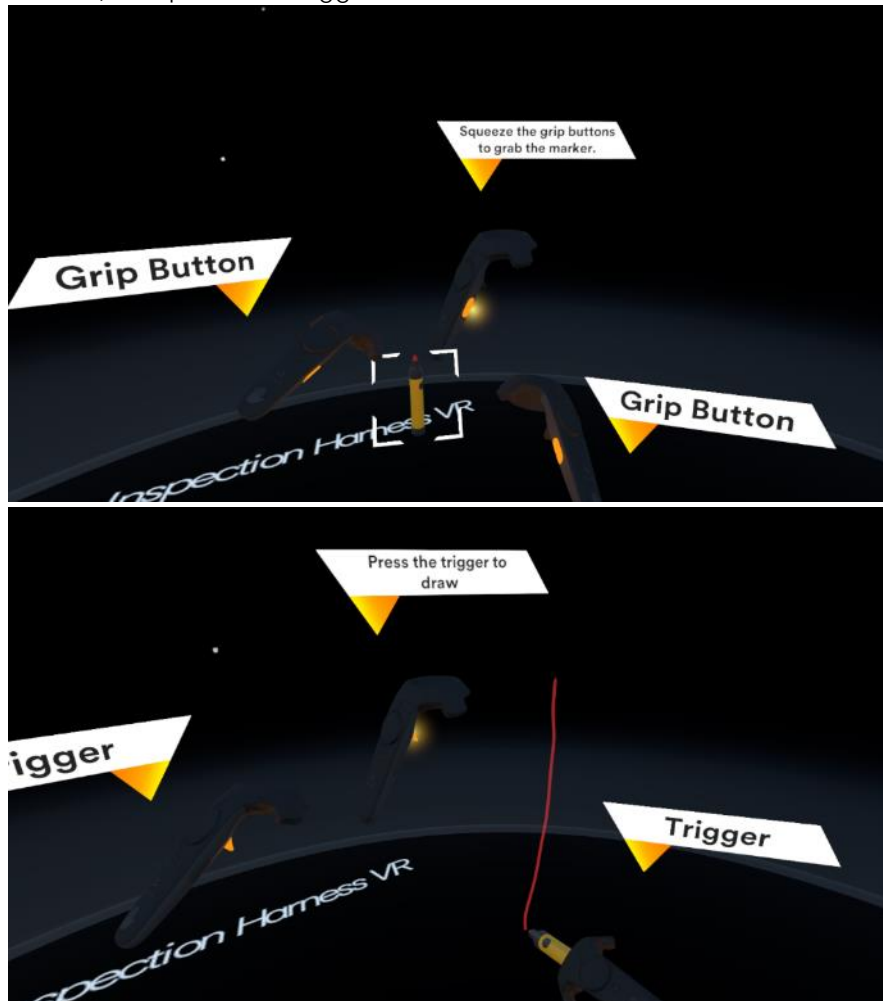1. Press the trigger to interact with the features.
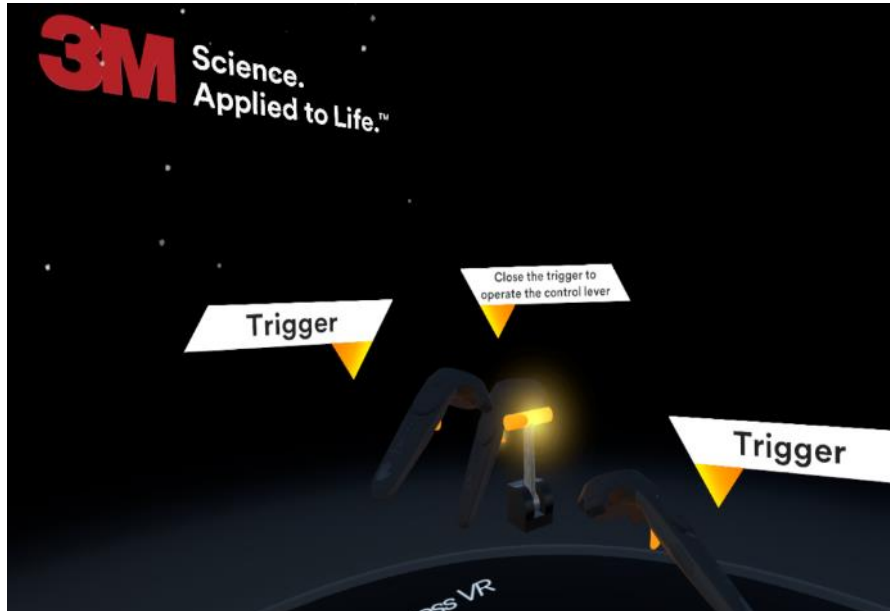
2. Move the touchpad side to side to rotate the objects.

3. Move the touchpad up and down to move the objects.

4. Press the grip buttons on the sides of the controller to pick up objects, like the marker, and press the trigger to draw.
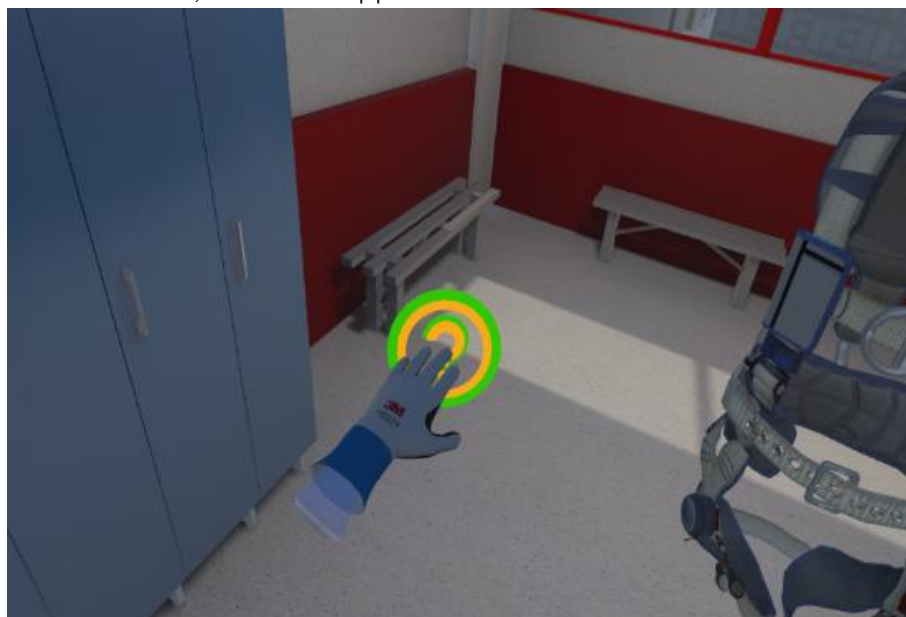
5. The user should consult the disclaimers.

6. On this screen, the user must enter their name and email and press the login button to continue.
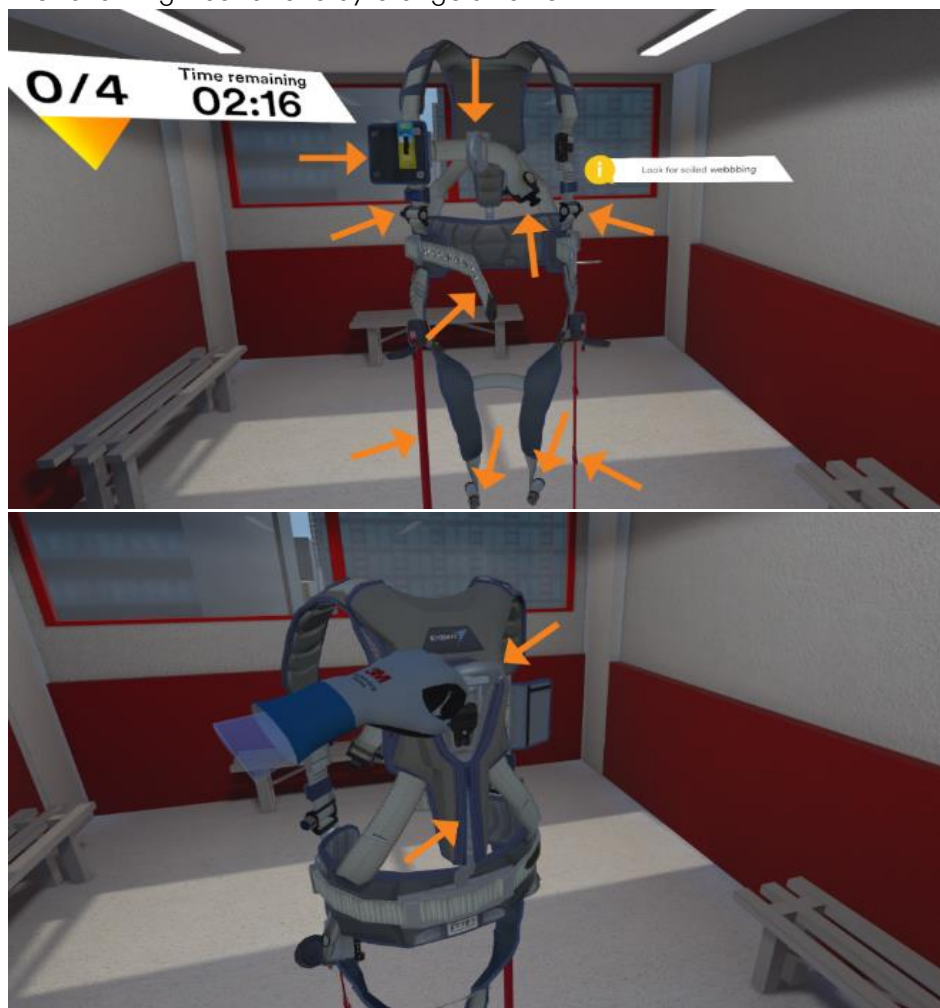

7. Via the question icon, the user can address the most common areas of damage on the harness, which will appear in a list.

8. Many parts of the harness are movable and are therefore animated. By pressing the trigger, the user can interact with the movable parts, which are indicated in the following illustrations by orange arrows.

9. The main objective of the experience is for the user to locate and indicate with the marker the four areas of damage the system will randomly show during each session.
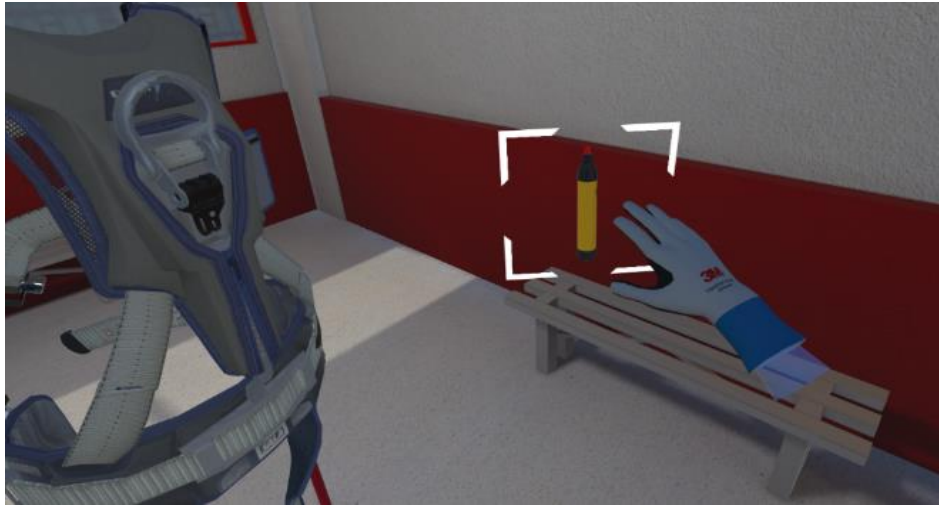
10. To mark in the air, the user must hold down the trigger.

11. If 30 seconds pass without any damage being detected, the system will display a pop-up message with a clue to make it easier for the user to locate the damage.
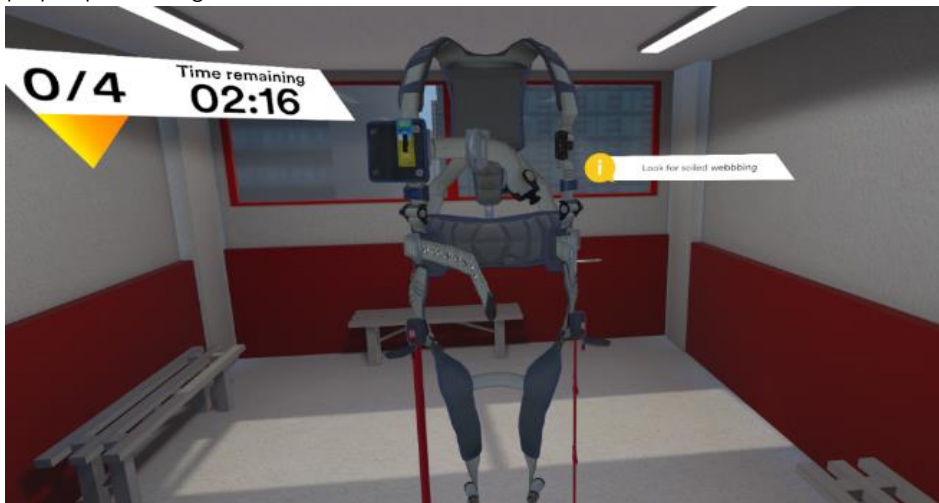
12. Once the four areas of damage have been located, a tablet will appear so that the user can register the inspection of the harness.


13. By simulating a touch screen, the user can interact with the tablet, select fields, and scroll through the screen by moving it up or down.
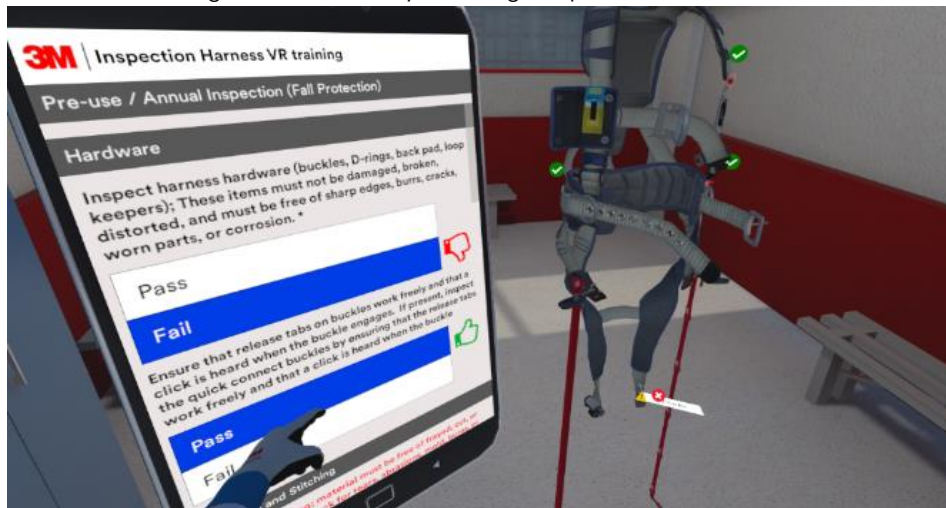
14. Once the form has been completed, the user can press the photos button to record evidence of the damage located.

15. To take photos, the user can pick up the tablet with one hand and can interact with the screen to take the photo with the other hand.
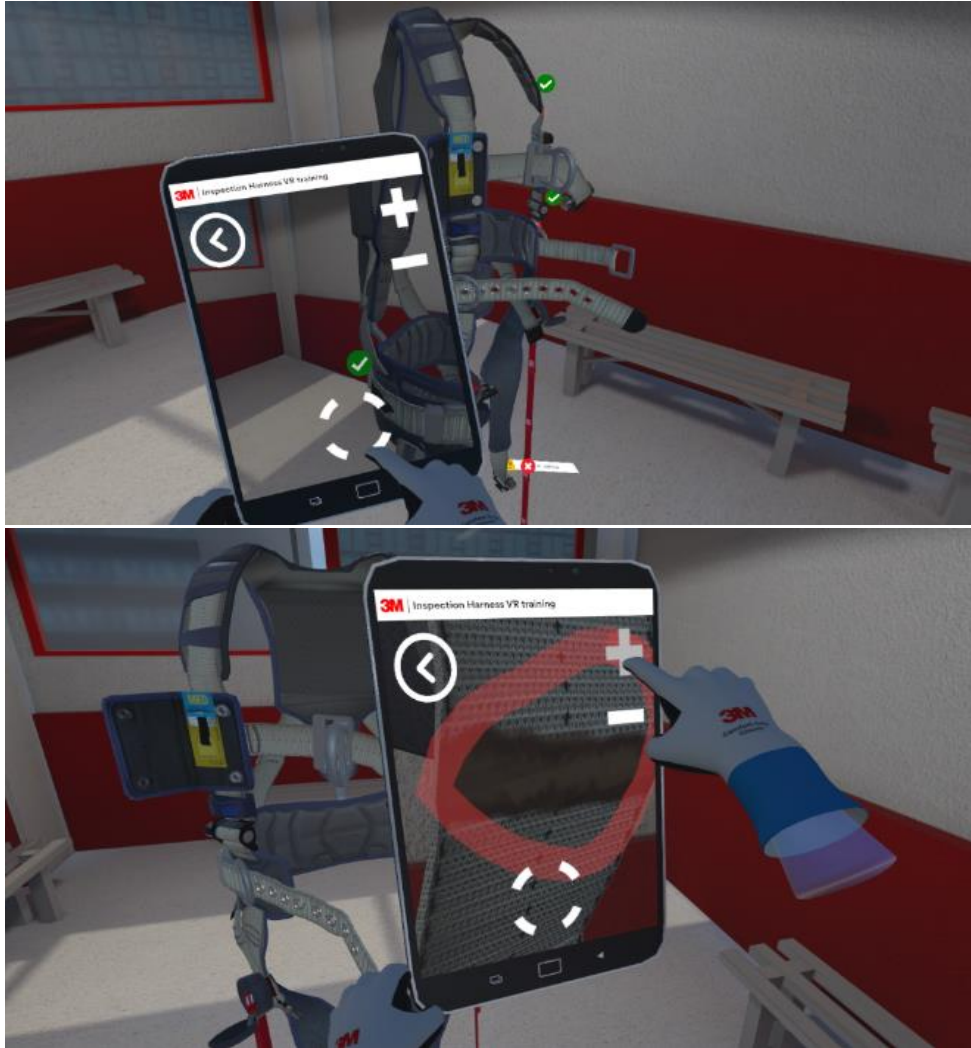
16. Once the photo has been taken, the user can accept it or cancel and retake it if desired.
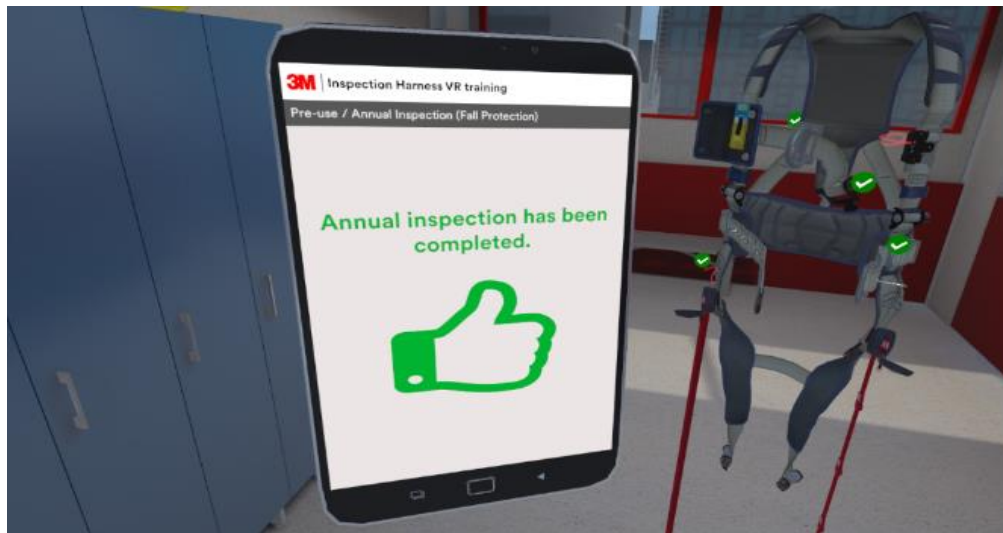
17. Once the four photos of the damaged areas have been taken, the user can review the damage registration and photos by consulting the notes section.
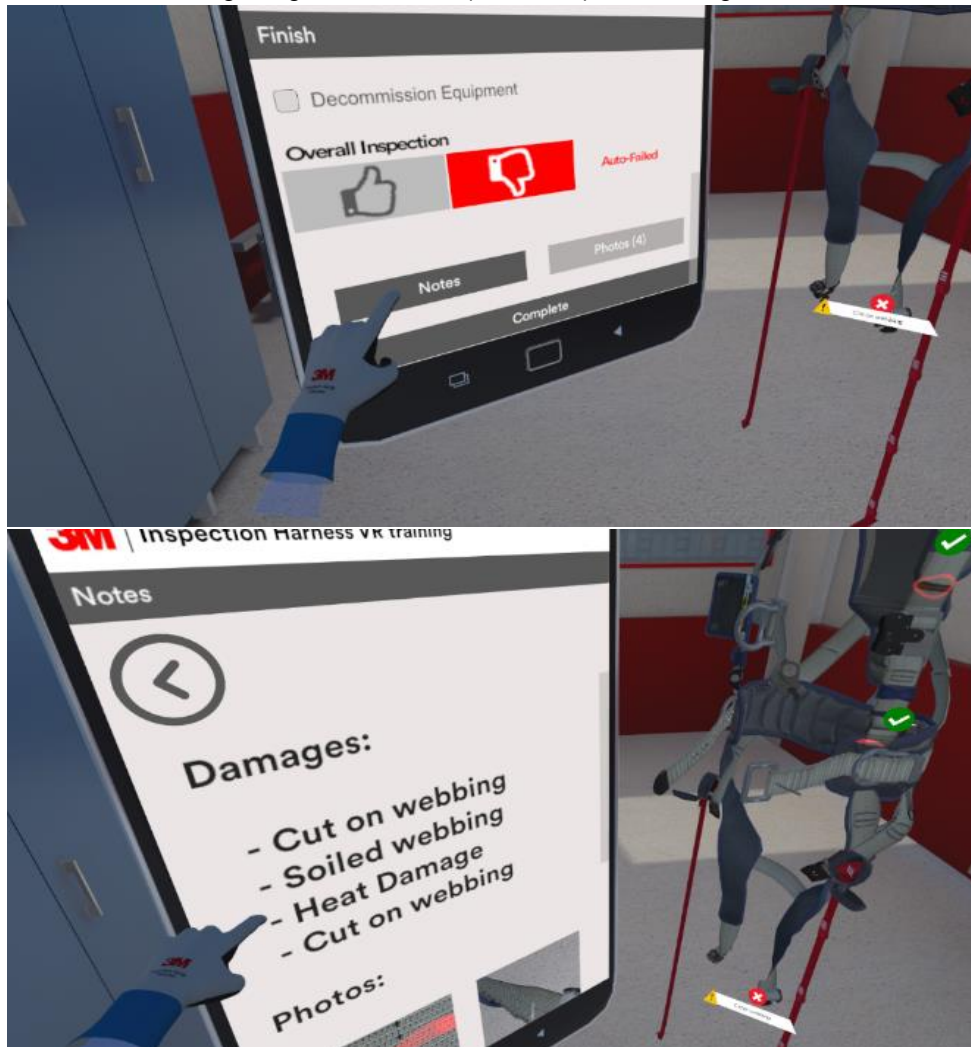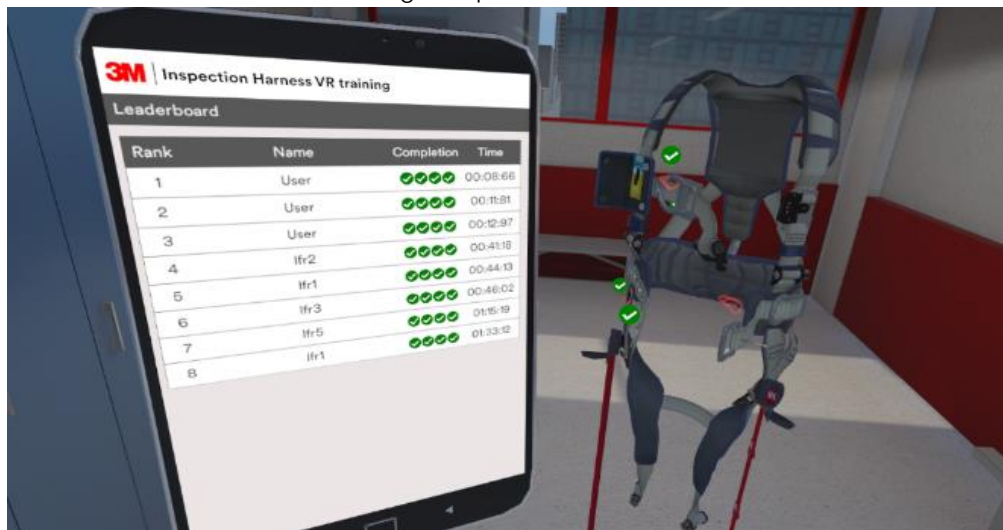

18. To finish, return to the initial screen and press the completed button.

19. Finally, the system will display a ranking of the best times of users who have located the four areas of damage required.

20. If the user has previously registered their name and email, the system will automatically create a record of learning as proof of the completed experience. If the computer is connected to the Internet, the program will send the report by email. Either way, a copy will be stored inside the application in the folder: *3MInspectionHarness_Data\User Records:*