



VR-ME
Virtual Reality for Maritime Emergencies

**I03: Testing, translation, and production of
complementary materials**

**A.15 Training support material development:
simulator handbook**

Report R10: Simulator handbook

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Overview of the Simulator handbook

SQLearn has developed a tutorial on how to use the simulator, which will include the following elements:

- How to install and use the VR-ME software
- Minimum hardware requirements
- How to use the hardware

About Virtual Reality (VR) in Training

Virtual Reality (VR) will lead to a significant change in the way we teach and learn. VR is characterized by immersion, sensory feedback, and interactivity. A recent meta-analysis showed that the use of VR (in a broader sense) in training increases learning success, especially with short learning contents (Spilski et al, 2019).

As the focus of craftsmen is on transfer of action-oriented knowledge, VR can particularly support their training with its immersive interaction possibilities (Spilski et al, 2019), especially in terms of action-oriented content, giving them the opportunity to experience the reality of being in an unfamiliar working environment. Vocational training is all about the balance between gaining knowledge and building experience – learning through practice (Derrick, 2020). The ability to go back through scenarios again and again, without additional expense or inconvenience, is a great advantage.

Benefits of VR

One of the issues of the typical training methods is the limited ability to describe and exemplify complicated concepts and explain them in a more practical and accessible manner (Manshul, 2020). The current way of explaining things is often a hit and miss affair where some trainees get the point while others are unable to do that due. VR apps can make the process of explaining complicated concepts less challenging; therefore, it expands teaching possibilities (Fernandez, 2017).

One of the toughest elements of teaching is keeping the attention of the classroom intact and dealing with a variety of distractions (Kalogiannakis, 2010). Well-orchestrated VR experience can completely shut off the trainees' attention from any distracting factors and amp up their concentration on the subject considerably (Bailenson et al, 2008).

Immersive VR education is by default a much more exciting affair than just sitting in a classroom listening to some mildly interesting dude spelling things. There is some action going on. In addition to that, trainees can be more active in the process. On one hand, it helps to keep them focused on the subject while on the other hand, it makes them much more interested in the subject itself, as they can do something with it.

Interactivity is the key reason why VR is so attractive for training purposes (Grzegorzczuk et al, 2019). VR gives an opportunity to experience the subject upfront. As such, this kind of experience is much more compelling and effective in delivering knowledge than a traditional lecture (Carruth, 2017).

VR Challenges

One of the biggest roadblocks for VR solutions in training is purely practical - it takes a lot of effort (both on developers and educators' sides) to create quality VR content that will cover the needs of the training programs. There are several reasons for content being a challenge:

- Basic VR tools are not sufficient to produce engaging content. They can be used as a supplement but not as a substitute.
- Trainers cannot do immersive experiences on their own.
- There is still the need to adjust the content to the target audience feedback.

VR's impact on mental and physical health has not been widely studied (Kenwrigth, 2018). On one hand, it is because the technology is comparatively new; on the other hand, it is not as widespread yet so there is not enough data for research.

Minimum hardware requirements

Oculus Quest is a tether less device that does not usually require a PC to operate. However, if you want to access a library of applications developed for Oculus Rift, you need to connect Oculus Quest to your PC. The recommended system requirements for Oculus Quest 2/Meta Quest¹ with Air Link PC are:

Processor: Intel i5-4590 / AMD Ryzen 5 1500X or better

GPU: NVIDIA GeForce GTX 1070 or AMD 500 Series and higher

Memory: 8GB

Operating System: Microsoft Windows 10

USB Ports: 1x USB port

How to use the hardware

- You can watch the following video: <https://www.youtube.com/watch?v=ZBSiZ5Pcijg>.
- Using your Quest 2 headset: <https://support.oculus.com/articles/headsets-and-accessories/using-your-headset/index-using-your-headset/>

Steps: Setting up Oculus Quest 2/Meta Quest

There is a great introductory video uploaded by the official Oculus account [here](#). We highly recommend watching it before initializing the device in order to understand the basics, although the machine itself is quite intuitive.

First of all, in order to use Oculus quest, you need to create a Facebook account and connect to it through the quest device. This is the 1st and mandatory step to use the device regardless the VR-ME applications. We suggest you creating a new private Facebook account for that use and only.

You will need to enable **developer mode** on your Facebook account and your Quest.

Step 1: Verify your Facebook developer account.

Create a new organization, follow these steps:

1. Go to <https://developer.oculus.com/manage/organizations/create/>.
2. Log into your Facebook account.
3. Fill in the appropriate information.

¹ Oculus 2 quest was rebranded a Meta quest, due to the change in the name of the former Facebook to Meta.

You will need to verify your account:

1. Go to <https://developer.oculus.com/manage/verify/>.
2. If prompted, login with your Facebook account.
3. Verify your account with your mobile number to set up SMS two-factor verification.

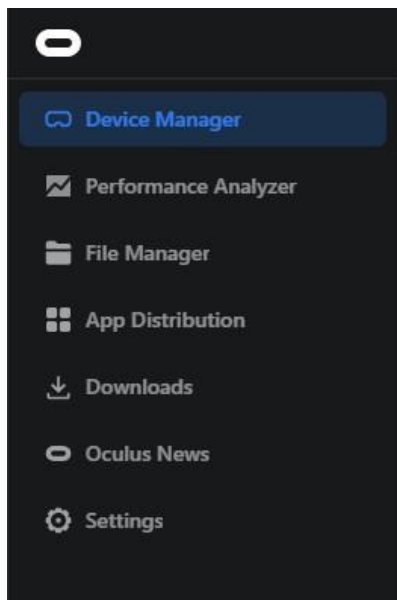
Step 2: Setting up Oculus Quest 2

Before Switching on the Quest Device, download the Oculus application from **Google play Store** to a smartphone device. After installing the application, you will need to open the GPS and being connected to Wi-Fi so to application can find the device.

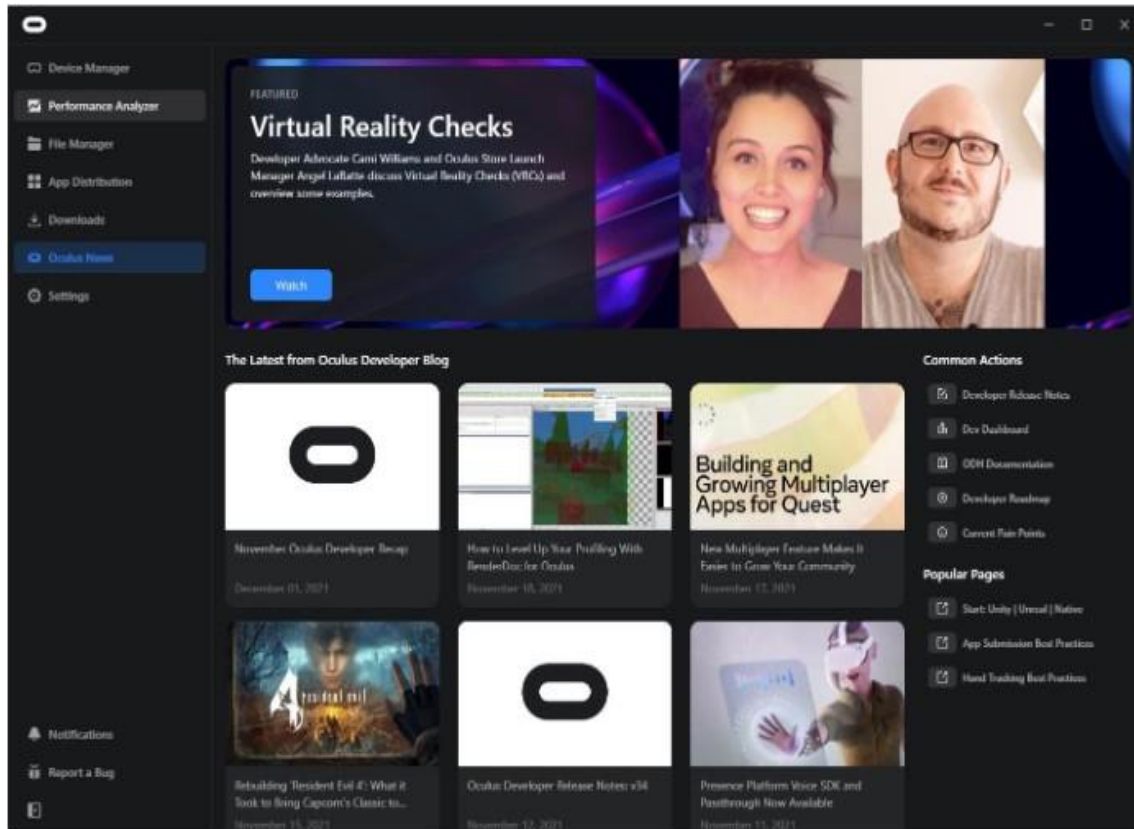
1. Open the application and connect to the Facebook account mentioned in the introduction and create in step 1.
2. Then go to Menu and select devices and choose your Oculus Quest Device.
3. For the first time, the mobile application will prompt you to pair a device with your mobile phone.
4. After you finish the pairing by following the video, under **Headset Settings**, choose developer mode and enable it.

Step 3: Upload APK to quest device

1. First, you will need to download Oculus Developer Hub.
2. After downloading and installing the software, press the continue button and login to the Facebook you create from Step 1. Below is an image of the home page.
3. Then, choose Device Manager.



4. Connect your Oculus device to your computer with a data cable.



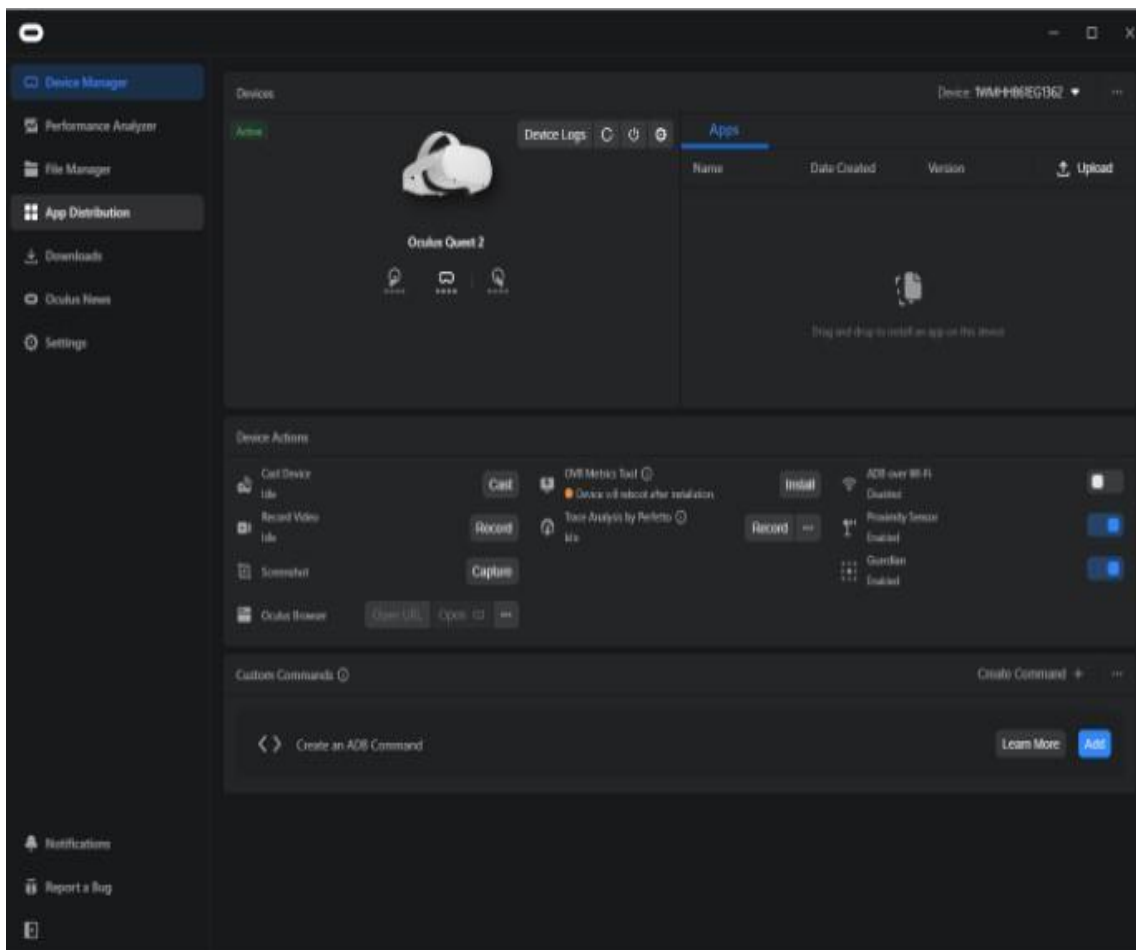
5. Allow the access to data in your device.



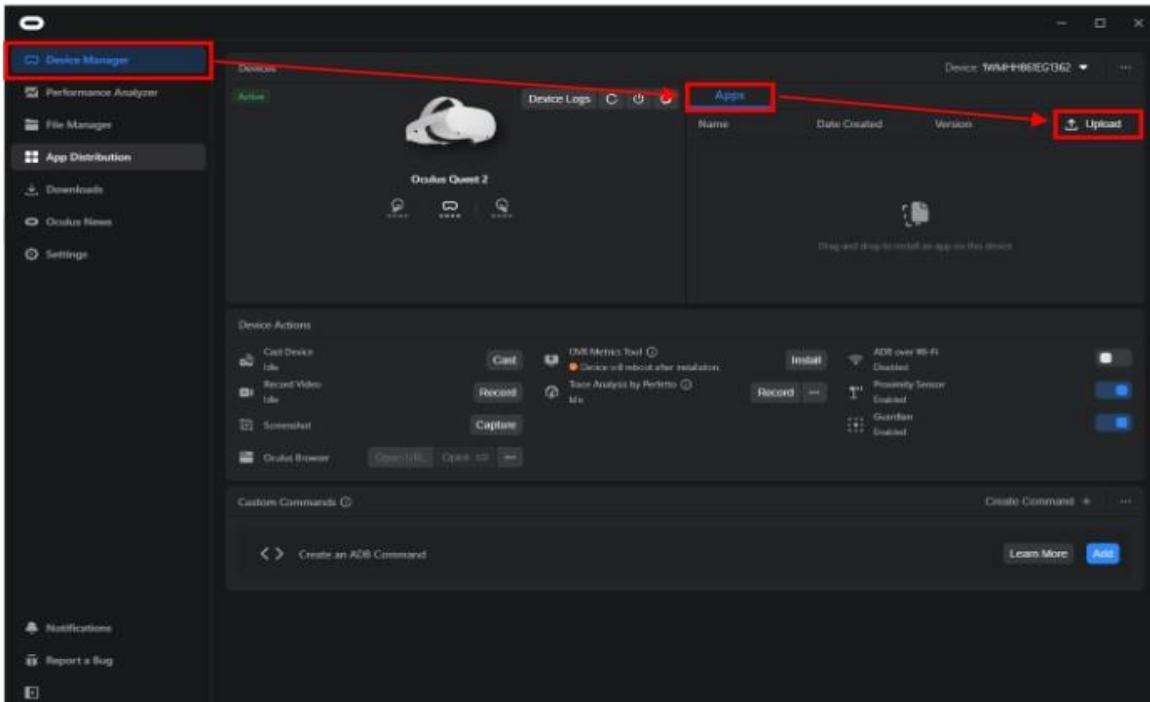
6. Last step, allow USB debugging in your device.



7. Finally, your device should appear in software.



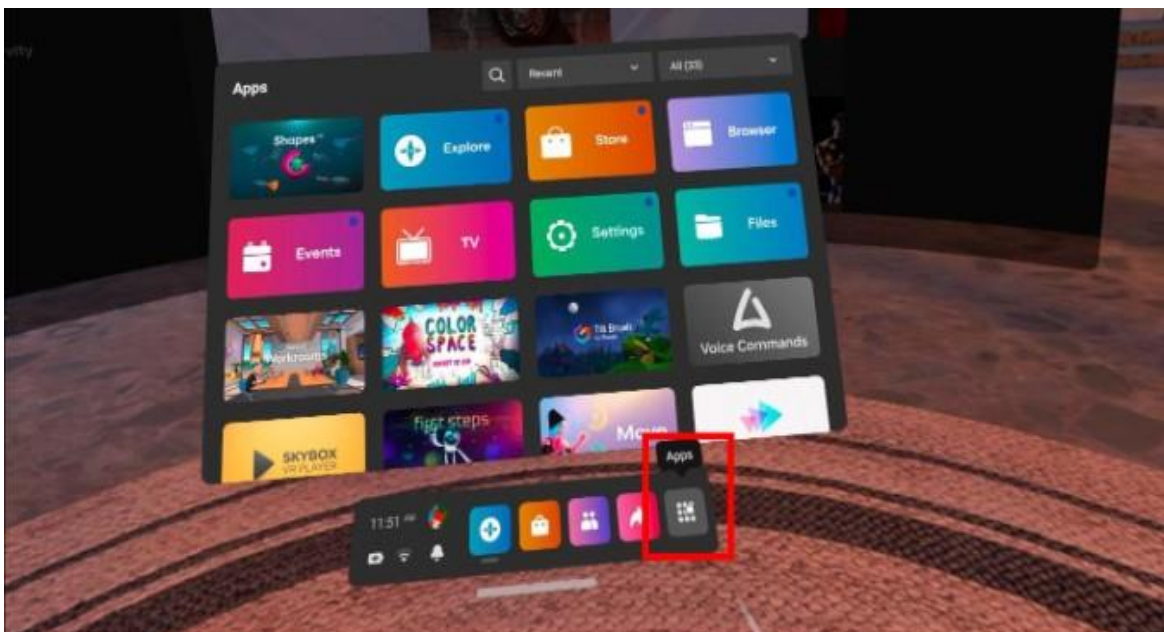
8. Then go to Device Manager -> Apps -> Upload.



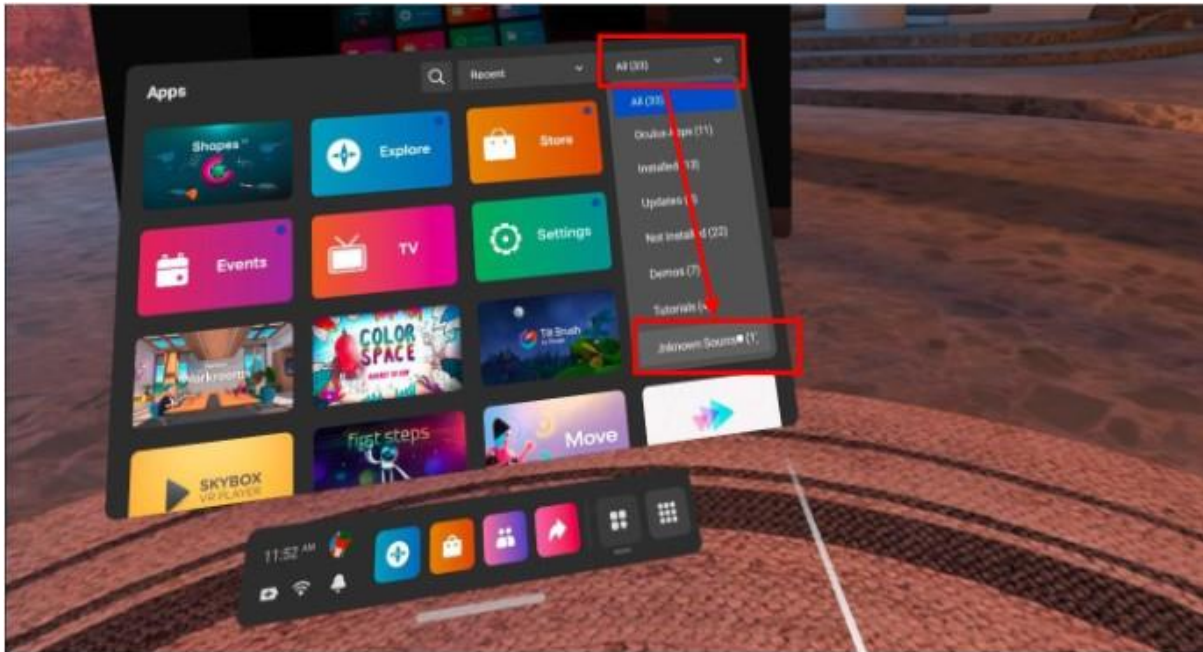
9. Add the APK, wait for the installing, then you can find your applications on your device.

Step 4: Start Your Applications on Oculus:

1. For better experience, you can unplug in the data cable now.
2. Switch on and awake your Oculus Device.
3. Go to Apps Menu.




4. All -> Unknown Source.





5. Then you will find the applications you just uploaded.

Downloading and Installing content for Quest 2/Meta Quest 2 Headsets


You can download new content from the Oculus Store from your phone or directly on your Meta Quest 2 or Meta Quest headset. Whenever you buy or download something, it will show up in your  panel.

To download new content from your headset:

1. Press  on your right Touch controller to pull up your universal menu.
2. Select **Store** .
3. Select what you want to download.
4. Select the price to buy it or select **Free** if it is a free download.

To download new content from your phone:

1. Open the Oculus app and tap **Store** from the bottom menu.
2. Tap what you want to download.
3. Tap the price to buy it or tap **Free** if it is a free download.

Note: If you have trouble downloading new content to your Quest 2 or Quest, put your headset on and check the **Not Installed** section of your  panel to view content you have added or purchased that has not finished downloading yet. ²

² <https://support.oculus.com/articles/orders-and-purchases/purchasing-apps/download-new-content-quest-2/>.

VRME Instructions

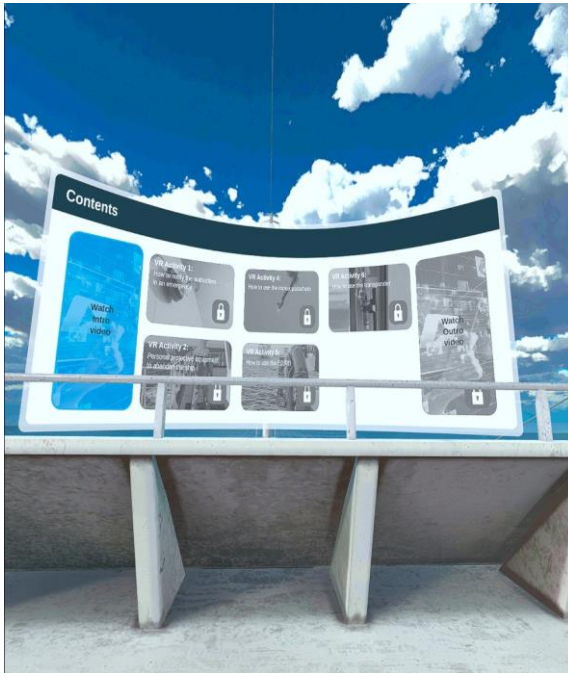
1. The first time you open the application you will see an introduction video.



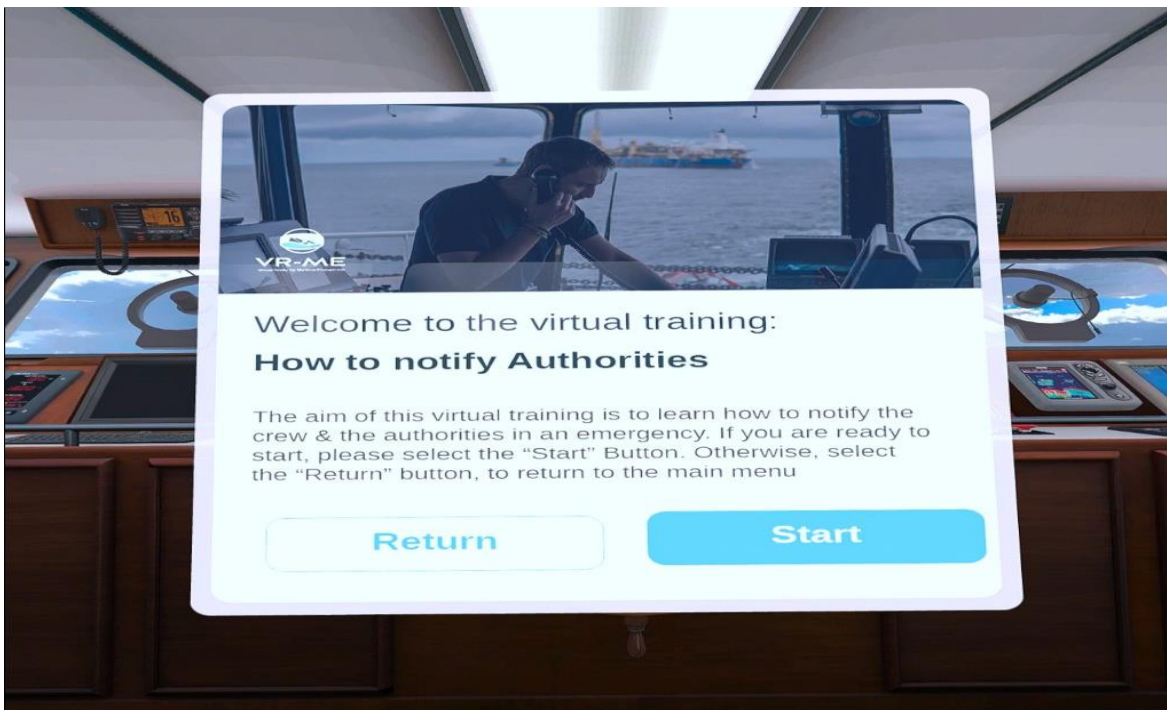
2. After the video, the avatar menu will be loaded. Now you can select which avatar you want to start by the controller and by pressing the front trigger.



3. Then you can select the first activity after you watch the intro video, the same way you select the avatar.



4. After you select the activity and press the start button, you can start the activity or return back to activity menu by pressing the return button.



5. In all activities you must follow the instructions and you can interact with the green outline object either by pressing with your avatar hand or by grabbing with left the trigger from the right controller or with the right trigger from the left controller. When a question pops out, you must choose an answer by selecting the front trigger.

How to use Oculus

- 1) By pressing and holding the grip button you grab objects. If you want to change hand, for example from right to left hand, first you leave a little space between your virtual left hand and the object which you are currently grabbing with the virtual right hand and then you press and hold the left grip button. After that you can stop pressing the right grip button.
- 2) By pressing the trigger button, you click or select UIs when needed.
- 3) With the left thumb stick you move to all directions.
- 4) With the right thumb stick you rotate the camera left or right.
- 5) To see up or down, you rotate your head up or down accordingly

