VR-ME
Virtual Reality for Maritime Emergencies

IO3: Testing, translation and production of complementary materials

A.15 Training support material development: simulator handbook

Report R10: Simulator handbook

Contents

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. Virtual Reality 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 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 (Grzegorczyk et al, 2019). Virtual Reality gives an opportunity to experience the subject up and front. 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

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needs of the training programs. There are several reasons for content being a challenge:
Basic VR tools aren't sufficient enough to produce engaging content. They can be used as a supplement but not as a substitute
Trainers can't do immersive experiences on their own
there is still the need to adjust the content to the target audience feedback.
Virtual Reality's impact on mental and physical health hasn't been widely studied (Kenwrigh, 2018). On one hand, it's due to the fact that the technology is comparatively new; on the other hand, it's not as widespread yet so there's not enough data for research.

Minimum hardware requirements

Oculus Quest is a tetherless device that doesn't 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.

Recommended system requirements for Oculus Quest 2 with Air Link PC:

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=ZBSiZ5Pcjjg .
 ➢ 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
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 in order to use the device regardless the VR-ME applications. We suggest you creating a new private Facebook account for that use and only.

You'll 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.

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 need to open the GPS and being connected to Wifi 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 Step1. Below is an image of home page.
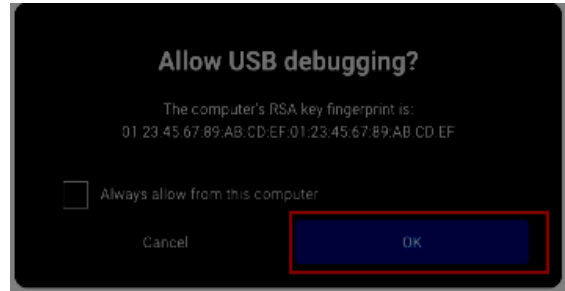3. Then, choose Device Manager.

4. Connect your Oculus device to your computer with a data cable.
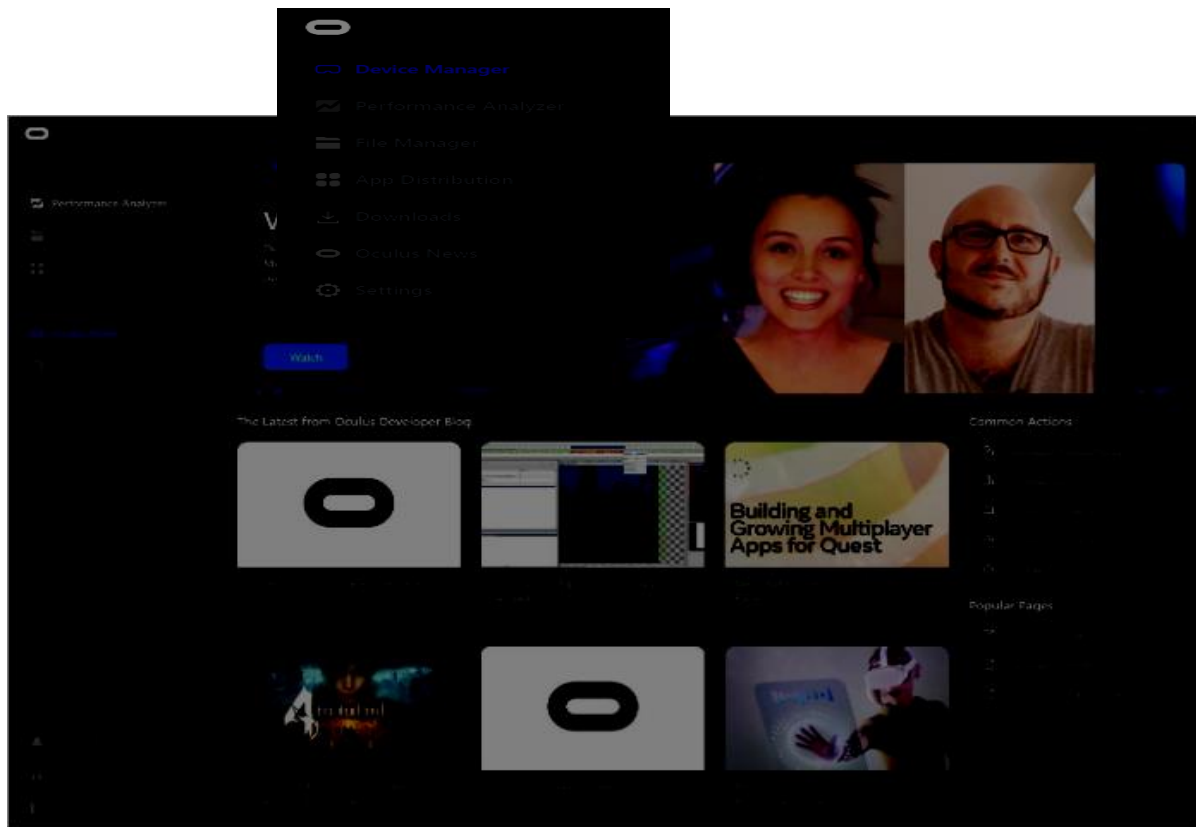
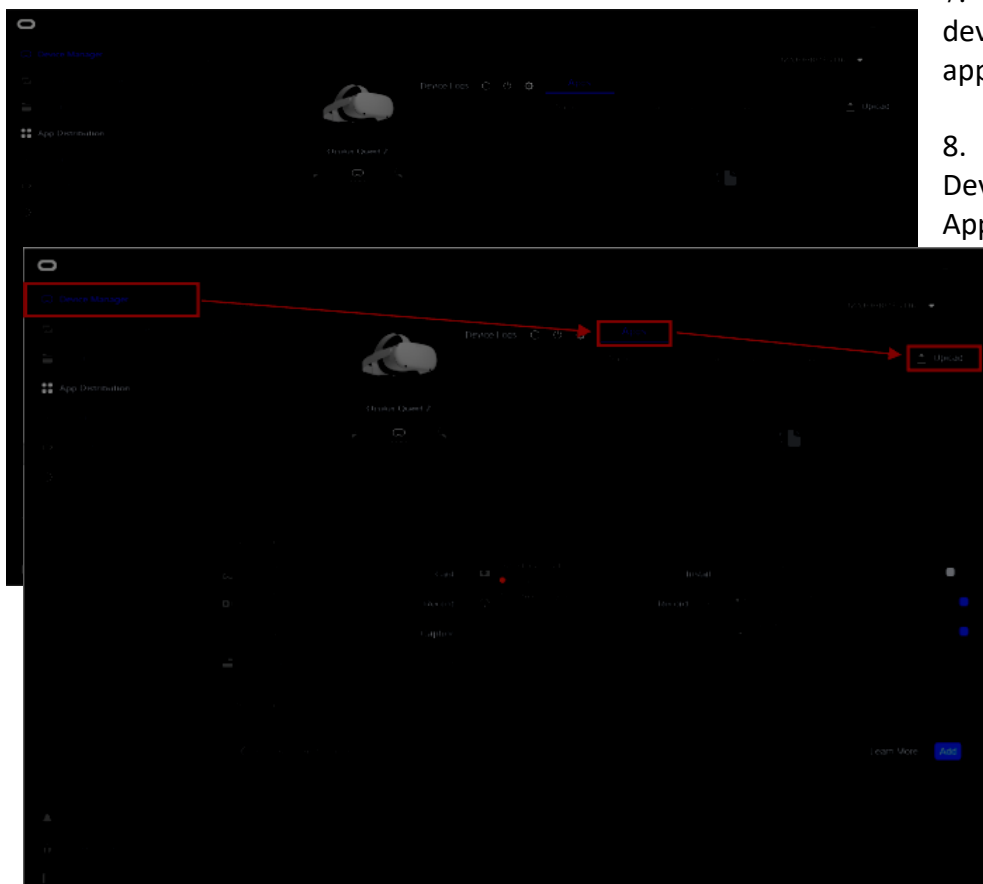5. Allow the access to data in your device.

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

7.   Finally, your device should appear in software.

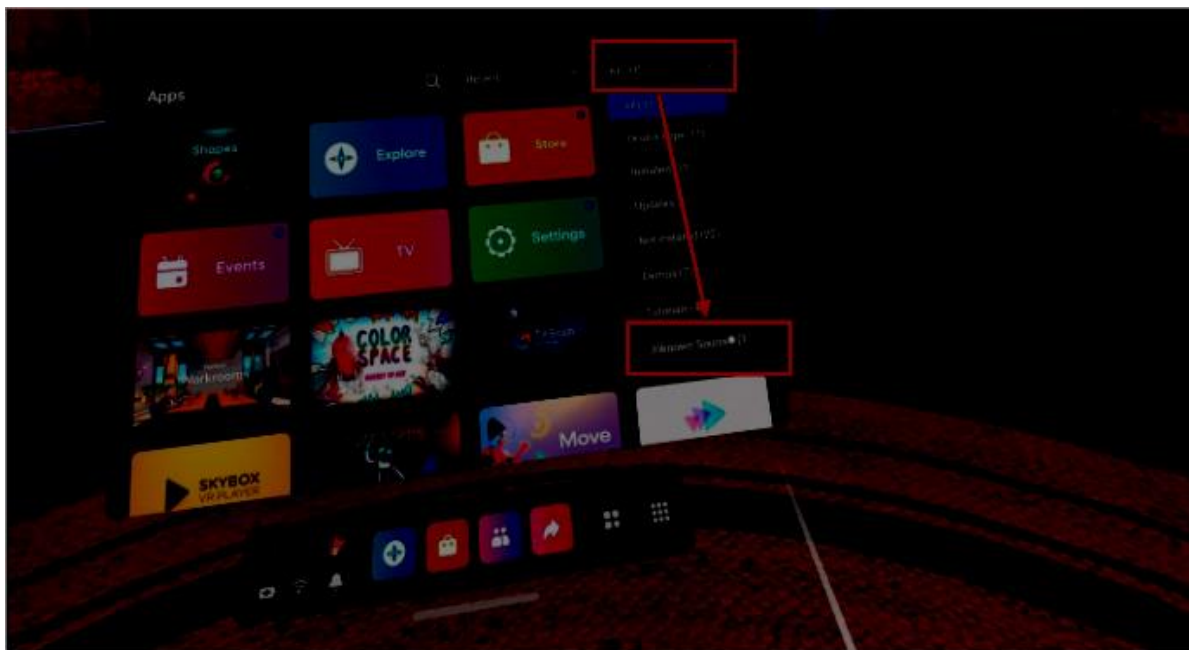8.   Then go to Device Manager -> Apps -> Upload.

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. Put on and wake your Oculus Device.
3. Go to Apps Menu.

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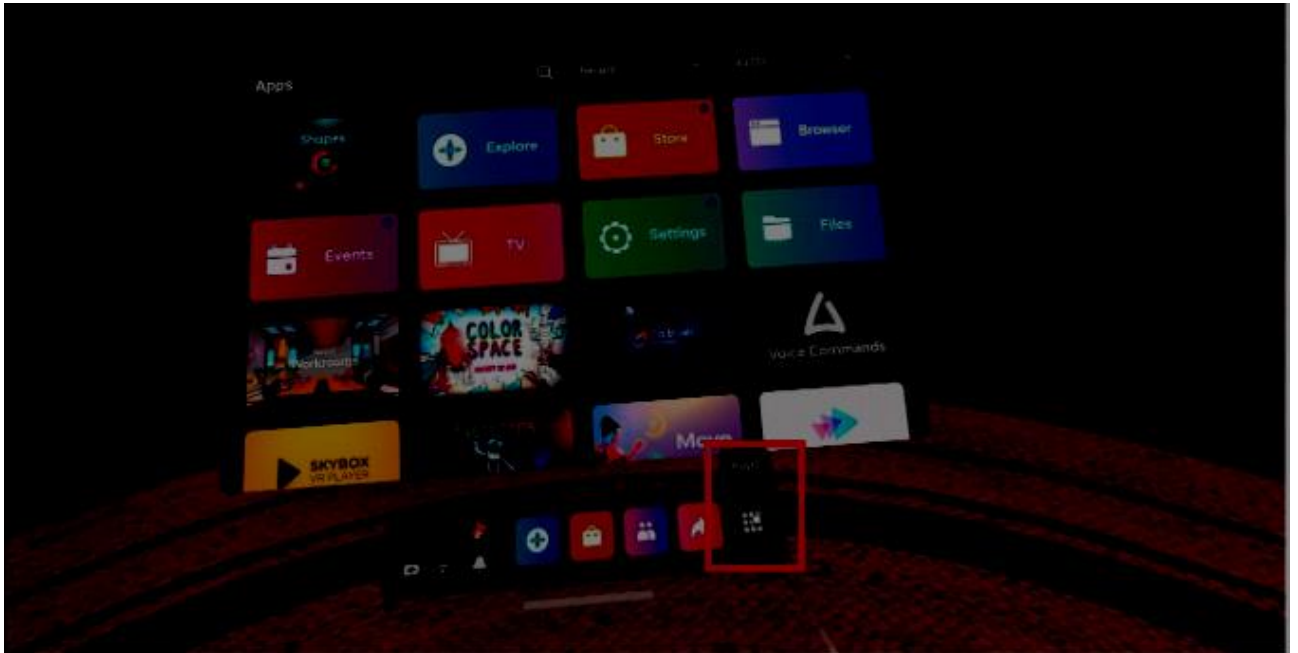
4. All -> Unknown Source.

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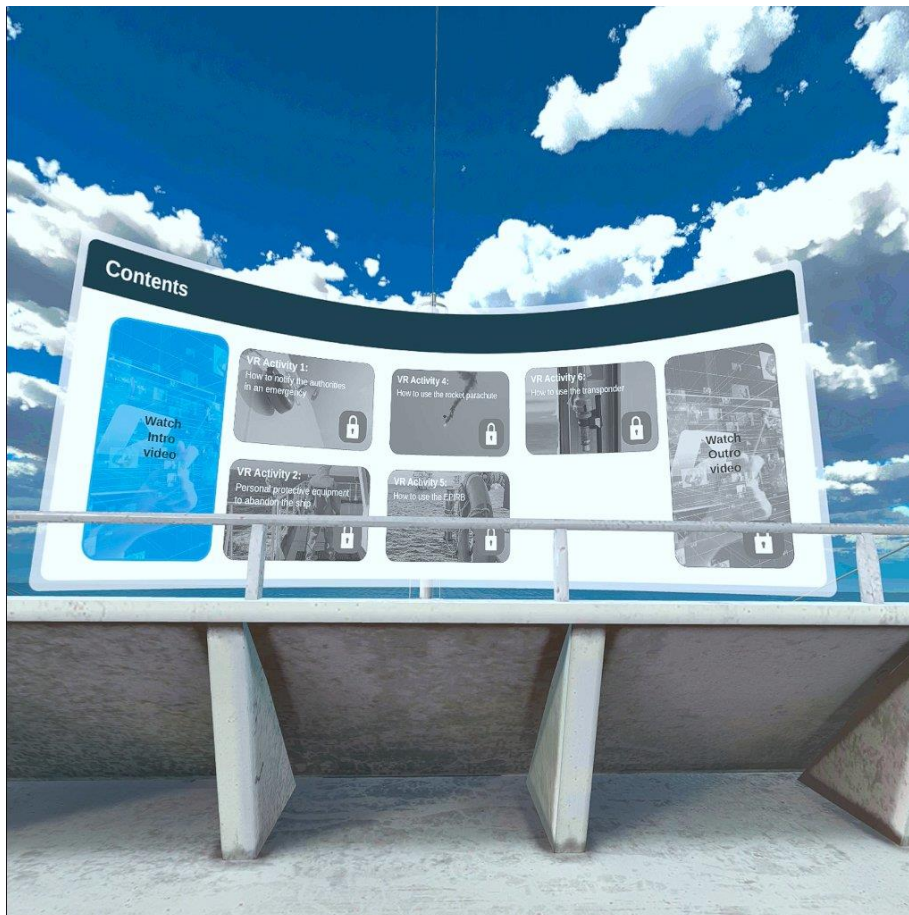
VRME Instructions

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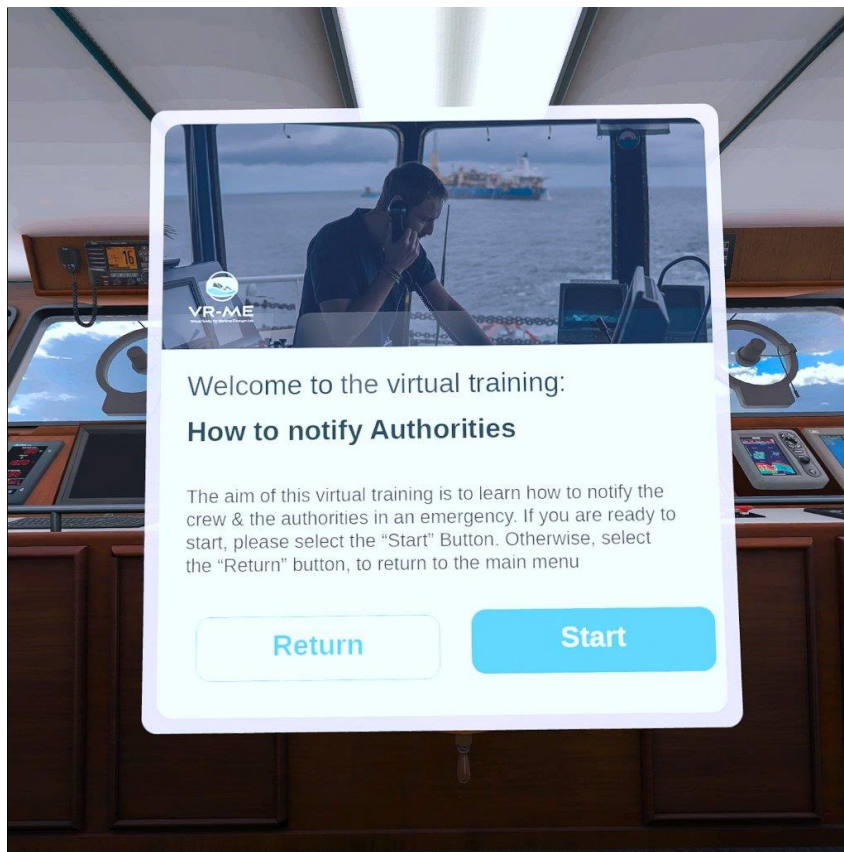
3. Then you can select the first activity after you watch the intro video, the same way you select the avatar

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 by left the trigger from the right controller or by the right trigger from the left controller. When a question pops out, you must choose an answer by selecting the front trigger.