Quantico USMC demo Event

Hardware Assembly Guide

Summary

This guide will help you with successfully set-up the simulator solution for Quantico USMC demo Event.

Content

Package contents

The whole solution is designed to use two transportable (wheeled) Pelican Cases with the possibility to easily set-up and dismount the whole simulator.

Important: Due to DHL weight limitation we had to move a few parts to an extra paper box and send it as an extra package (you will receive two cases and one paper box). Before the event, please move all parts located in the paper box into the defined position in cases (And before DHL pickup, please put it back to the paper box). This weight limits will be solved in the final version by using the component's lighter material.

Before opening the cases please be sure that you will release Case cover (not bottom). The bottom part contains metal lock as on the following picture:

Received Cases are marked by letters "A" and "B", the following list defines the content of each case:

Case A contents

1. Main Platform (motoring engine)
2. Controllers
   a. Joystick *
   b. Throttle *
   c. Pedals (rudders)
3. Interconnection Cabling
   a. PC power (US PWR) cord
   b. Main Platform US PWR cord
   c. Lighthouse US PWR adaptors
      i. Extension cables
   d. Speakers cable
      i. USB PWR cable with 3.5 jack
      ii. 3.5 jack extension cable
      iii. USB power adaptor (US)
   e. USB extension cable
   f. Controller USB cables
      i. Joystick *
      ii. Throttle *
      iii. Pedals
      iv. Platform (USB A-B)
4. PSA - power supply adaptor
5. Mounts
   a. Joystick mount *
   b. Throttle mount *
6. Fasteners
   a. Joystick - 4x butterfly screws
   b. Throttle - 4x butterfly nuts, 4x butterfly screws
   c. Seat - 2x quick-coupler
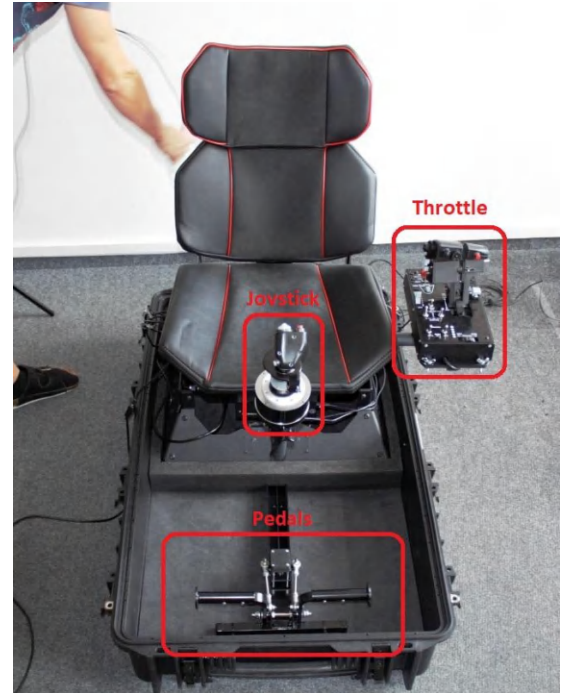
7. Additional equipment
    a. Spare fasteners
    b. Cleaning tools
        i. Torx screwdriver
        ii. 2x microfibre cloths
    c. Simulator assembly tools
        i. Cross-point screwdriver
        ii. Butterfly screwing tool
        iii. Spanner
        iv. Cable ties

* Marked items were sent in the additional package containing three smaller boxes due to transport weight limits

Case B contents

1. Simulator Seat part
2. Armoured PC including
   a. XTAL headset
   b. Wireless keypad
   c. 2x lighthouse base stations
3. 2x Tripods for lighthouse stations

Extra Paper Box Contents

Due to transport weight limits, we have sent you controllers and its mount adapters separately. We also prepared space in Case A to install these parts into the box. Please release all these HW parts from paper and plastic cover and keep this paper box in your apartment for DHL pickup after the event ends.

Note: Due to transport limitation, we were unable to send you any liquids for cleaning lenses and cushions. We would like to kindly ask you to buy it locally.

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The transportable flight simulator

The main idea is to offer easily transportable flight simulator by using the latest VR technology with respect to weight limits. We also have kept focus to easy and quick deploy of the whole solution.

We decided to use one part of the Pelican case for a basis whole SIMs. This solution speed-up deploy sequence and makes the whole solution in reasonable dimensions.

Quick installation guide

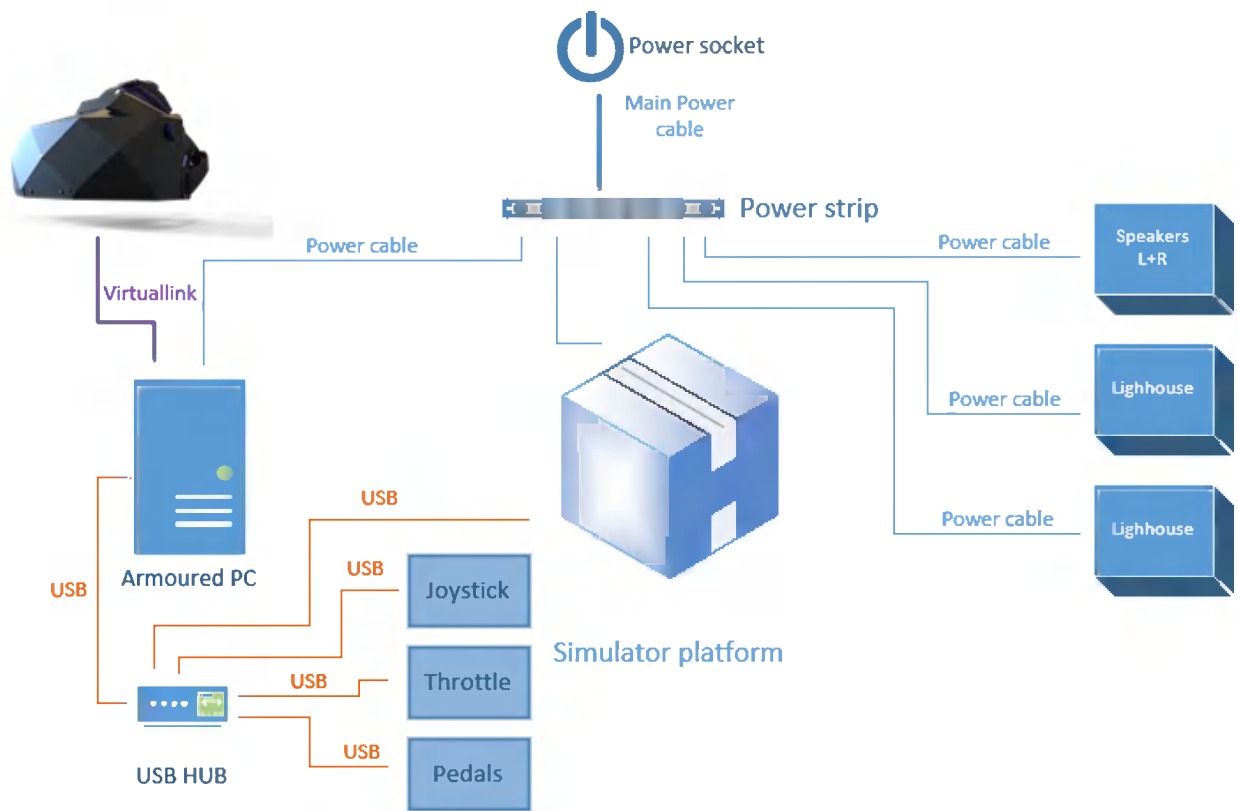The concept of flight simulator is to divide parts into two cases.

Bottom of Case A will be used as the basis of SIMs - Main Platform engine and pedals will remain inside of bottom part of the chase. There are also all necessary cabling for the whole system (including one power cable for the whole solution - under the main platform engine is located main power distribution unit.

To deploy the whole simulator you have to go thru several main steps:

1) Open Case "A" and release controllers and adapters from the bottom part.
2) Move the bottom part to the final position in the room
3) Open Case "B" and remove simulator seat.
4) Connect and lock simulator seat with the main simulator engine
5) Tilt-up the seat and lock it behind the seat
6) Install Joystick and Throttle with mounts with simulator seat
7) Remove from Case "B" Armored PC case and two stands
8) Move Armored PC to the final position (close to simulator's seat back)
9) Open Armored PC and gently release two Lighthouses
10) Attach lighthouses with stands and put it on defined positions (see chapter "Valve 6Dof tracking on page 17"
11) Connect Audio cable with PC
12) Connect all PWR cables (PC, SIMs); put main power cord into the wall socket
13) Gently remove XTAL from the PC case and connect it with PC by the virtual-link cable
14) Power-on SIMs and PC
15) Use USB interconnection to connect PC and USB HUB
16) Connect to USB all USB devices (joystick, throttle, pedals, SIMs unit)
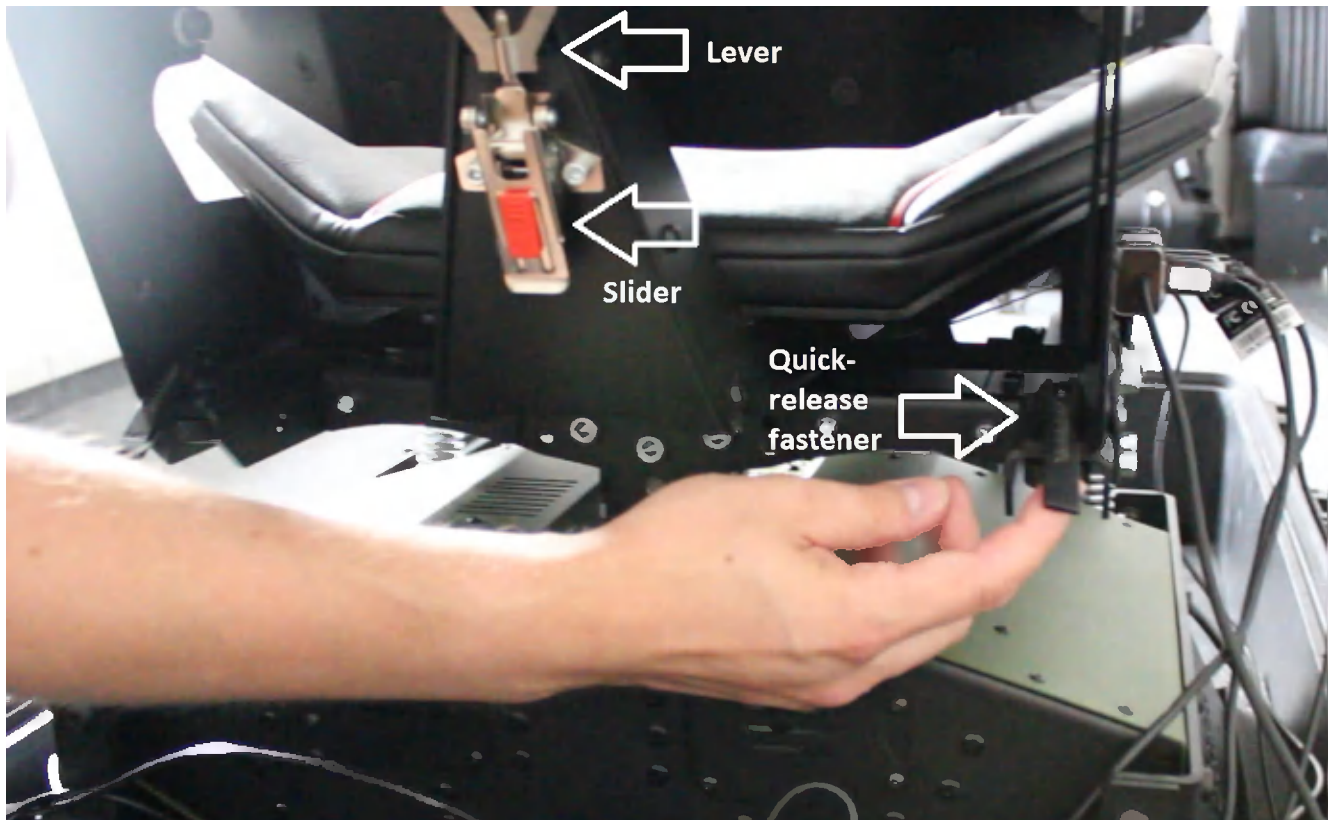17) Follow instructions in Software Step-by-step guide

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Cabling schematic plan

Following schematic plan gives you look out how to interconnect all devices properly.

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Hardware step-by-step installation

1. Remove both case lids
2. Remove top cushions with accessories from the cases
3. Remove from Case A > Controllers; Fastening material; Upper Cushions; Bubble foil
4. From case B take out > NovBox PC; Simulator Seat
5. **Seat installation**
   5.1. Push the seat to the platform from the back gently
   5.2. Fasten the seat to the platform at the back using quick-coupler
   5.3. Pull up the seat and fasten the lever

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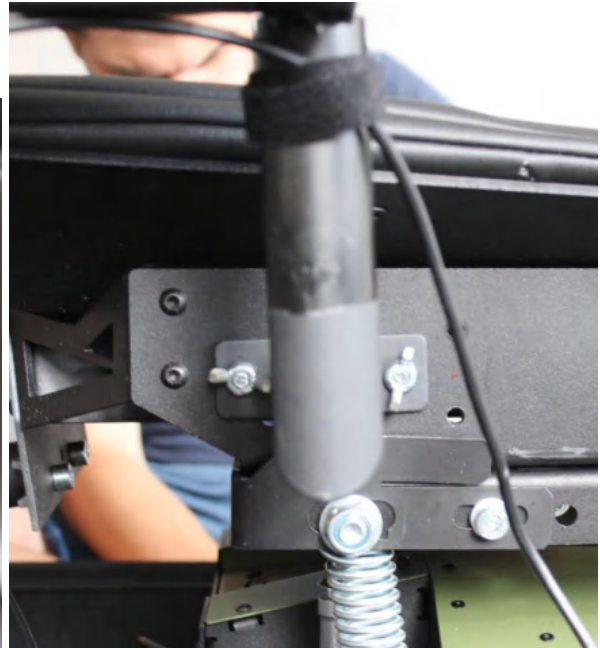www.vrgineers.com
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6. Controllers' installation

6.1. Installation of Joystick

6.1.1. Prepare the 'Joystick' labelled fasteners

6.1.2. Install the joystick to the mount using four butterfly bolts

6.1.3. Install the mount to the seat using two angular butterfly bolts - use the tool for tightening the butterfly screws

6.2.   Installation of Throttle

6.2.1.   Prepare the 'Throttle' labelled fasteners

6.2.2.   Install the mount to the seat using two angular butterfly bolts - use the tool for tightening the butterfly screws

6.2.3.   Install the throttle to the mount using remaining (eight) butterfly bolts

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7. Prepare the controller cables to the USB hub at the side of the seat
8. Put out all cable ends behind the seat of the case
9. Plug the PSA in the PWR outlet
10. **Armoured PC**
    10.1. Open the PC
    10.2. Plugin the PWR cord labelled 'Computer' into the PC
    10.3. Switch on the PC PWR source
    10.4. Boot the PC with PWR button

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11. Platform

11.1.　Plugin the 'Platform' labelled PWR cord to the platform

11.2.　Switch the platform on
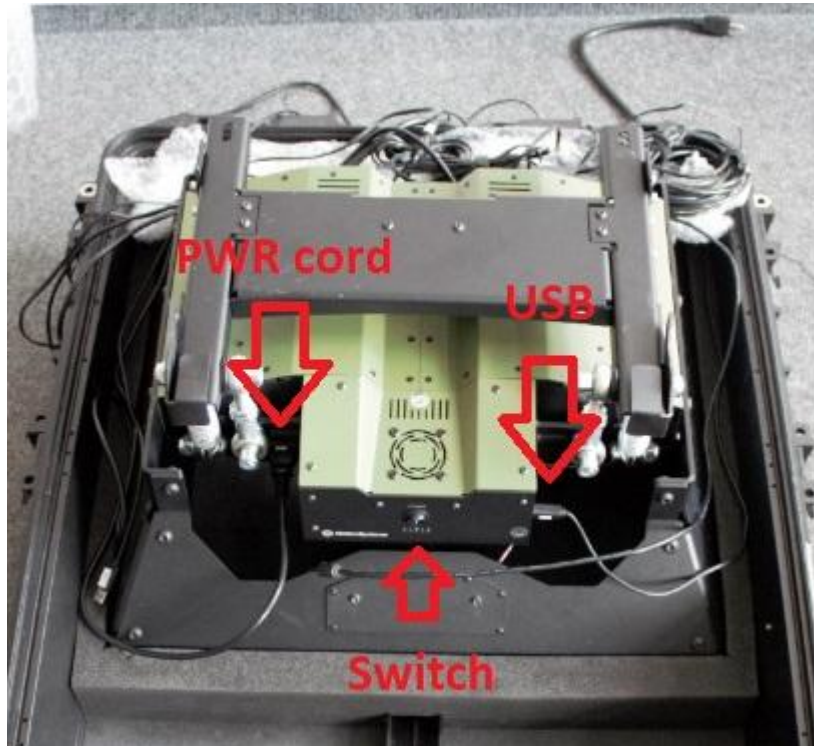
12. USB hub

12.1.　In the beginning, connect the USB hub and the Armoured PC with a USB extension cable

12.2.　Wait approx 10 seconfs to establish the communication between USB hub and PC and then proceed to the next step

12.3.　Plug all USB cables to the USB hub on the side of the seat (all cables have proper labels)

　12.3.1.　Joystick

　12.3.2.　Throttle

　12.3.3.　Pedals

　12.3.4.　Platform

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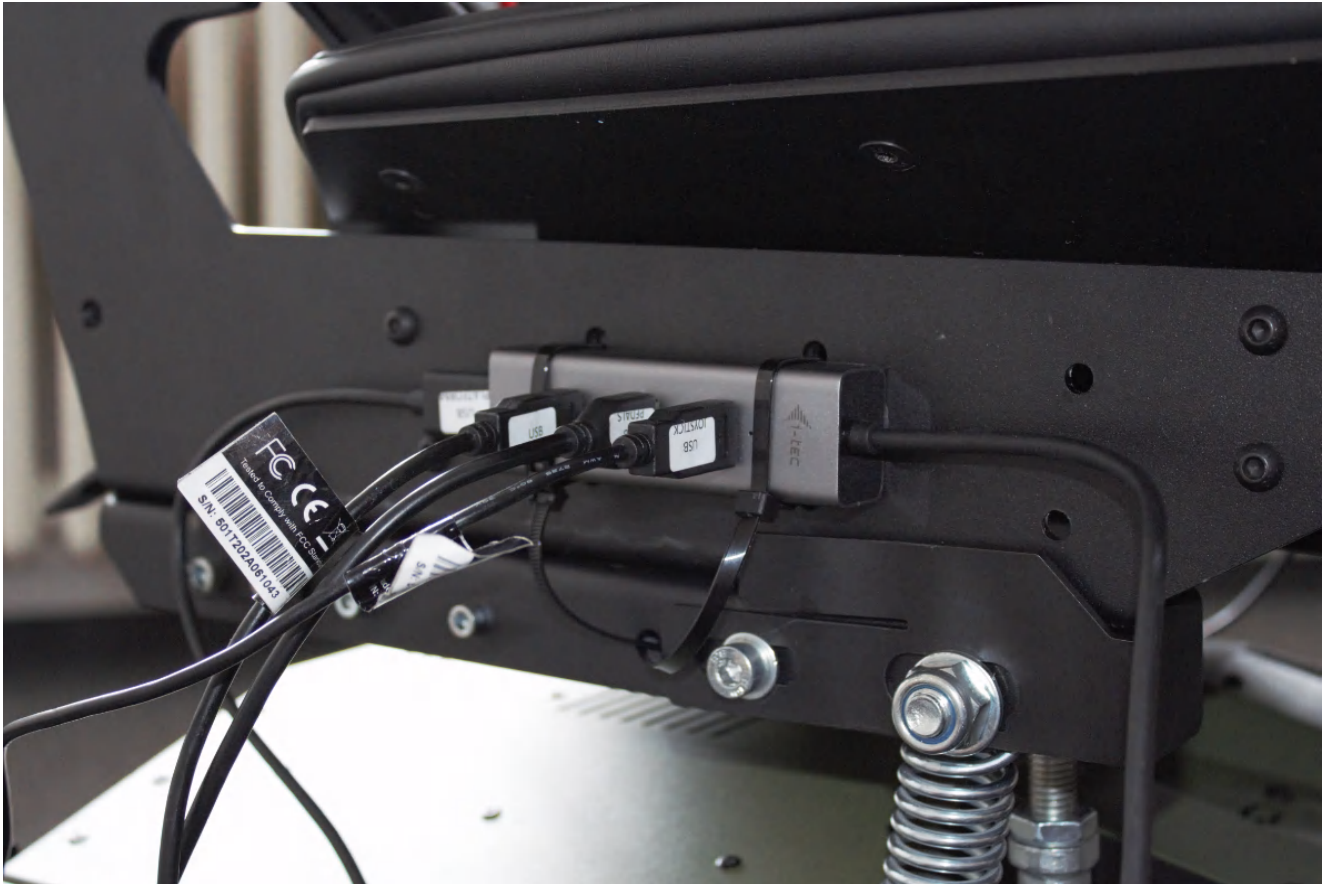
13.   Check that all power (PWR) cords are plugged to the PSA:
    13.1.   NovBoxPC
    13.2.   Platform
    13.3.   USB adaptor with speakers
   13.4.   Both lighthouse adaptors

14.   **Lighthouse base stations (LH) installation**
    14.1.   Remove stands out of the Case B cushion
    14.2.   Set up the stands
    14.3.   Layout the stands in the space diagonally to the corners of the case (see the scheme on page 17 of this guide)
    14.4.   From headset in the NovBox case take out the Lighthouses
    14.5.   Screw the LHs onto the tripods
    14.6.   Direct the LHs to the seat
    14.7.   Plug the Power cables to the LHs by using the extension cables

15. **XTAL connection**
    a. Unscrew the white locknut of a grommet a bit
    b. Remove the grey grommet cap
    c. Plug XTAL's virtual link cable to the PC through the grommet
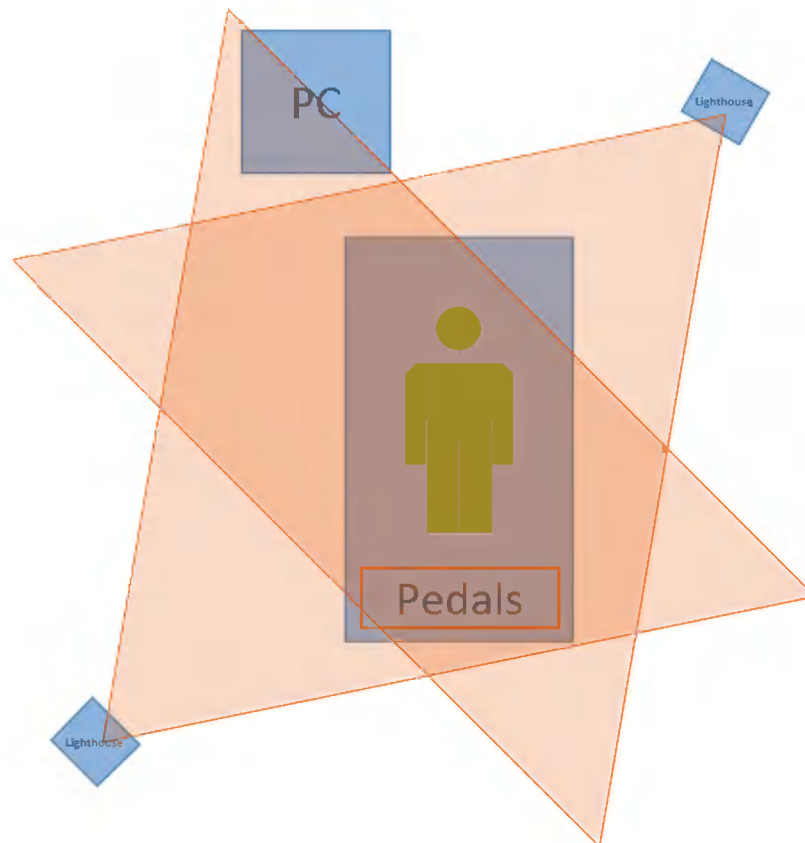   d. Side with the sticker 'UP' has to be at the top
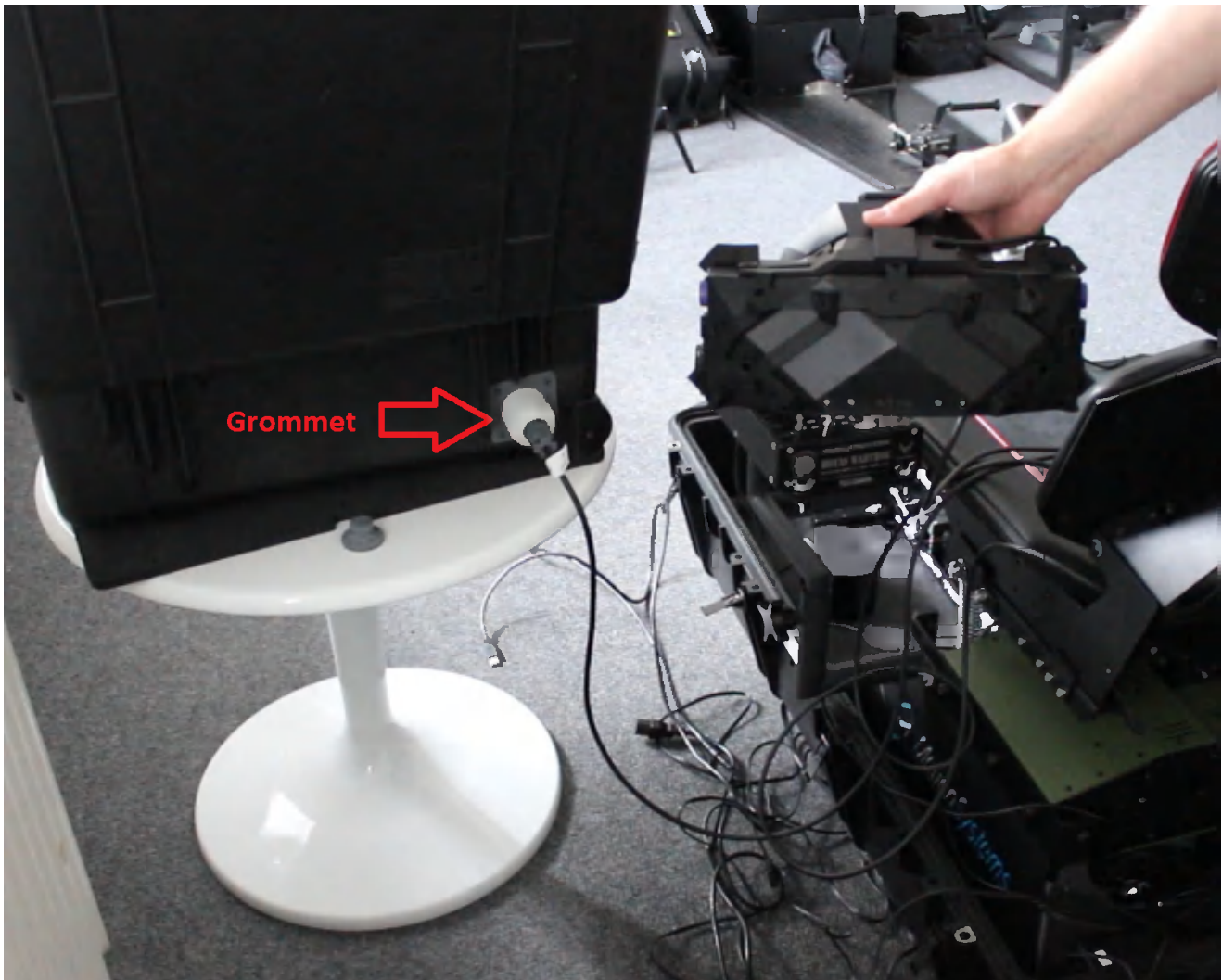
Further, follow instructions in the **Software Step-by-step Manual**.

Valve 6Dof tracking

Valve tracking is very easy to install a run. All necessary software is preinstalled on PC with ability is to work fully offline (SteamVR).

In Case "B" you will find two stands for Valve Lighthouses. During installation you have to meet the following rules comings from used technology:

- avoid to floor/stands shaking
- avoid direct sunshine which can disturb used IR technology
- remove all others IR sources from the room
- XTAL clip-on must be on visible position for both of Lighthouses (sitting people)
- Lighthouses will be around 1,5 above ground tilted down about 15%

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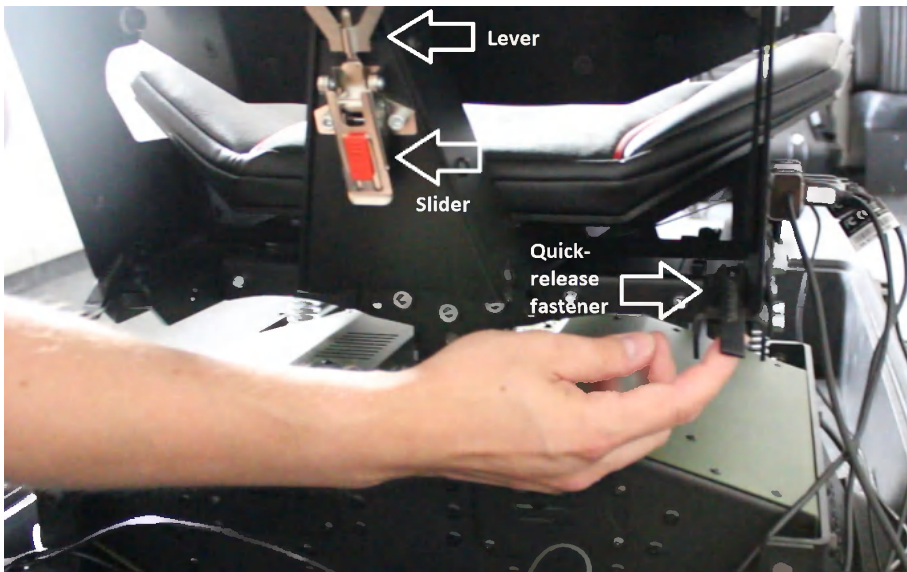
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Case transport instructions and layout

After the event, we would like to ask you to disassembly and wrap-up kindly all parts of the simulator.

Case A

a. Cables
   i. Disconnect all cables (except the cables plugged to the PSA)
   ii. Roll the cables
   iii. Put the cables to space behind the platform
   iv. Put a bubble foil onto the cables


b. Platform
   i. Remove both quick-couplers from the seat (pull up and unscrew)
   ii. Recline the seat by releasing the lever on the back (push down red slider and lower the lever)
   iii. Pull the seat out of the platform

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Labels on image: Lever, Slider, Quick-release fastener

c. Controllers
    i. Center the pedals
    ii. Place the pedals cushion into the case
    iii. Place joystick and throttle cushions into the case
    iv. Roll the cables of joystick and throttle
    v. Place joystick and throttle inside the cushions
    vi. Put small cushions to the joystick and throttle holes
    vii. Put all fasteners to correct bags and put them into the holes in the cushion
    viii. Place big cover cushion onto the controllers
    ix. Put mounts to the cover cushion
    x. Place cover cushion onto the platform
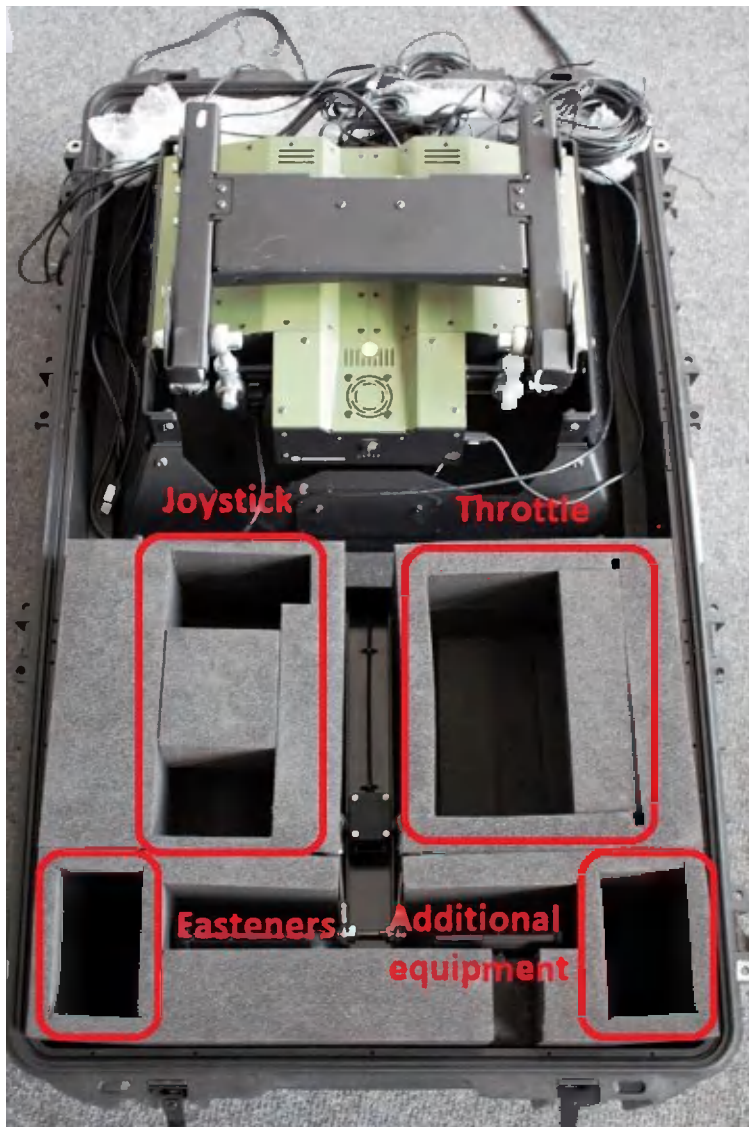
d. Cover the case with the lid
e. Use your weight to push the lid down
f. Lock all 12 locks of the case

Case B

  a. XTAL headset
    i. Roll the virtual link cable
    ii. Put XTAL headset to the NovBox case with the cable below the headstrap
    iii. Untie the top strap of the headstrap
    iv. Put the LH cushion to the headstrap
    v. Put the two LHs to the LH cushion
    vi. Tighten the top strap of the headstrap
    vii. Put some stuffing between the LHs and XTAL lenses

b. Put NovBox into the case B
   Make sure to place the NovBox to the case correctly - grommet to the cut-out in the cushion.

c. Put the seat into the case correctly

Put the NovBox and the seat into the case the same way it is in the picture.

d. Put the two big cushions onto the NovBox and seat
e. Place both put-together tripods into the cushion
f. Tie the tripods to the cushion with cable ties

g. Cover the case with the lid
g. Use your weight to push the lid down
h. Lock all 12 locks of the case