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1 On Safety

1.1 Intended Use

Tobii Pro Mobile Device Stand is designed to be used only with Tobii Pro X2-30/X2-60/X3-120/Nano Eye Tracker (no other types of eye trackers can or should be used with the stand). As with the Pro X2-30/X2-60/X3-120/Nano eye trackers, the stand is intended only for use in office environments. Read this User’s Manual carefully before assembling or using the stand.

1.2 Mounting Warning

Pro Mobile Device Stand is designed to be mounted on a table. Be careful when mounting or using the stand so as not to cause injury or damage. Make sure the stand is assembled correctly and that the eye tracker is properly fitted on the stand before use to avoid damaging the stand, the eye tracker or the test participant. Assembly instructions are on page 5.

1.3 Usage Warning

Please follow the instructions in this User’s Manual carefully. If incorrectly assembled or used, the eye tracker or parts of Tobii Pro Mobile Device Stand can be damaged and may even cause injuries. Should the device for any reason harm someone or damage something due to falling or other incident, neither Tobii nor any of its representatives will be responsible or liable for any damages or injuries that may arise. Mounting and use of the stand is done entirely at the user’s own risk.

When using and adjusting the angle of the Tobii Pro Mobile Device Stand, be careful so as not to injure the test participant or yourself as there is a risk of squeezing objects or fingers between moving parts. The scene camera holder and other parts of the product may cause injury if it strikes the head or other body parts.

1.4 Small Parts Warning

Pro Mobile Device Stand is composed of numerous separate, assembled parts. In the hands of a child some of these parts may become unattached and may possibly constitute a choking hazard or other danger to the child. Young children and animals should not have access to or use the device without parental or guardian supervision.
2 Product Description

2.1 Intended use

The Pro Mobile Device Stand is designed to be used with a Pro X2-30/X2-60/X3-120/Nano Eye Tracker (no other types of eye trackers can or should be used together with the stand), and a Windows computer running the Tobii Studio or Tobii Pro Lab software.

Note: No eye tracker, computer or software license is included.

An entire mobile device testing solution comprises a Pro Mobile Device Stand, one Pro X2-30, X2-60, X3-120, or Nano eye tracker and the computer running Tobii Studio or Pro Lab. The compatibility between Tobii Pro eye trackers and Tobii Pro software is listed in the Compatibility Table in chapter 4, page 13.

The Tobii Mobile Device Testing Solution enables collection of eye tracking data during natural interaction with smartphones, tablet computers and other devices or objects of similar size such as books or brochures. The tested device (e.g. smartphone or tablet) is attached to a supplied holder using adhesive mounting putty or a Nanopad to keep the device in the correct position throughout data collection. The holder allows participants to switch the device orientation between landscape and portrait mode.

The stand is delivered with all necessary equipment for eight different configurations optimized for different devices and setups. All equipment fits into the supplied travel case. The stand includes an adjustable scene camera (that points at and films the mobile device) to enable capturing of user actions and the user interface (Eye tracking data will be superimposed on images and video captured with the scene camera in the analysis software, Tobii Studio or Pro Lab). Sound can also be recorded though the scene camera to be played back in Tobii Studio or Pro Lab. The stand and one eye tracker fits in the supplied travel case which is designed for easy transportation of the entire solution.

The mobile device stand supports both Pro X2 and X3 product families, as well as the Pro Nano eye tracker. The package includes a Pro X3-120 Eye Tracker compatibility kit (adapter plate and a 1.8 m long USB 3 cable) for use with a Pro X3–120 eye tracker. This adapter plate is also compatible with the Tobii Pro Nano eye tracker. The Pro X3–120 Eye Tracker compatibility kit is also available to buy separately for clients already in possession of a Pro X2 Mobile Device Stand; please contact Tobii Sales for more information.

2.2 Tobii Pro Mobile Device Stand – Technical Specifications

Compatible eye trackers: Tobii X2-30, Tobii X2-60, Tobii Pro X3-120, Pro Nano (not included).

Supported devices: Devices up to 31.9 cm (12.6") in diameter can be rotated 360°. In a fixed position, devices measuring up to 31.9 cm (12.6") in height can be used; no limitations in width. Includes two different holders for tablets and smart phones.
Configurations: The stand is delivered with all necessary equipment for eight different configurations optimized for different devices and setups. All equipment fits into the supplied travel case.

Scene camera: Full HD USB camera, Logitech C920 HD, supports 1920 x 1080p and lower resolutions.

Sound recording: Through the scene camera using built-in dual stereo microphones.

Position of eye tracker: Two positions (high and low), 8 cm (3.1”) in-between positions. Moves the head movement box 8 cm (3.1”).

Possible position of mobile device: Flat holder (lower) and bracket holder (higher), 8 cm (3.1”) in-between positions. The mobile device can be fixed and rotated 360°.

Possible position of scene camera: Scene camera arm can be set in two positions, 9.2 cm (3.6”) in-between positions.

Maximum tilt: 27° (10° forward, 17° backward), to adjust for participant height.

Mounting solution: Integrated screw clamps for table mounting.

Stand dimensions: Footprint: 42 x 25 cm (16.5 x 9.8”)

Height: Maximum 68 cm (26.8”)

Stand construction: Durable aluminium and steel components

Weight (including travel case): 13.8 kg (30.4 lbs.)

Color: Black

2.3 Package Contents

2.3.1 What is Included

The package for Pro Mobile Device Stand includes:

1. Mobile device stand main body with table clamp (1 piece)
2. Scene camera holder (with Logitech webcam) (1 piece)
3. Guide bars (2 pieces)
4. Eye tracker extension (1 piece)
5. Flat holder for tablets (2 pieces)
6. Bracket holder for smart phones (2 pieces)
7. Calibration plate (2 pieces)
8. Calibration plate fixing rods (2 pieces, one long and one short)
9. Scene camera rod — long (1 piece)
10. Scene camera rod — short (1 piece)
11. Hand screws M6x15 (4 pieces, 2 pieces for Guide bars, 2 pieces for eye tracker extension)
12. Hand screws M6x20 (4 pieces, for scene camera rod)
13. Nanopad (5 pieces)
14. Mounting putty (1 piece)
15. Velcro (10 pieces, 15 cm length each)
16. USB extension cable for X2 product family (1 piece, 0.8 m length)
17. Allen key 2 mm for holder adjustments (1 piece)
18. Allen key 4 mm for scene camera removal (1 piece)
19. Travel case (1 piece)
20. Eye tracker mounting plate (1 piece)
2.3.2 Tobii Pro X3 compatibility kit

The compatibility kit for Pro X3 consists of one mounting adapter for both the Pro X3–120 Eye Tracker and the Pro Nano Eye Tracker (see image above) and one 1.8 m USB 3 cable. These two items can be ordered separately for users of the previous X2 only MDS package.

2.4 Considerations

The Pro Mobile Device Stand is designed to make optimal use of the Tobii Pro eye tracker (X2-30, X2-60, X3-120, Pro Nano) in mobile device testing. To ensure superior quality of the collected eye tracking data, please consider the following sections.

2.4.1 Light Conditions

We recommend you conduct your eye tracking study in a controlled and well-lit environment. Sunlight contains high levels of infrared light that will interfere with the eye tracker system and should be avoided.

2.4.2 Eyelashes

Eyelashes can be obstructive when the participants’ eyes are less open, especially if participants are wearing mascara. In rare cases, the eyelashes can completely block the view of the participant’s pupils, making eye tracking impossible.

2.4.3 Droopy Eyelids

Droopy eyelids or otherwise obstructive eyelids can block the view of the participant’s pupils. In rare cases such eyelids may completely block the view of the participant’s pupils, making eye tracking impossible.

2.4.4 Glasses and Contact Lenses

Participants with bifocal or progressive glasses should be screened out, or asked to remove their glasses. Bifocals and progressive glasses may reduce accuracy. Contact lenses may slightly increase noise but do not normally introduce any error into the data. Colored or fancy lenses that change the appearance of the pupil or iris should be avoided as they may make eye tracking impossible.
3 Assembly Instructions

To meet the needs of different device types, participant height and study objectives, Tobii Pro Mobile Device Stand can be assembled to create eight different configurations (A1, A2, B1, B2, C1, C2, D1 and D2). Any of these configurations can be optimal for a specific testing scenario. In the following instructions, configuration A2 will be assembled. In standard scenarios, configurations A1 and A2 are recommended for most tablets and smart phones.

Configuration A2, recommended for most tablets and smart phones.
3.1 Assembling Tobii Pro Mobile Device Stand

To assemble the stand (configuration A2):

1. Make sure you have all the pieces required to assemble the stand. Remove all the pieces from the travel case before you start to assemble it.

2. Slide the main body onto the table top as shown in the picture. Make sure it slides on as far as possible so that the stand sits tightly.

3. Firmly tighten the clamp screws underneath the table top.

4. Slide the long scene camera rod into place for setup A2. There are two scene camera rods available: one longer that positions the scene camera farther away (for setups A/B/C/D-2) and one shorter that positions the scene camera closer to the tested device (for setups A/B/C/D-1).
5. Use two of the larger (M6x20) hand screws to fasten the scene camera rod to the main body on the stand.

6. Slide the scene camera holder (with Logitech webcam) onto the scene camera rod. Use the two remaining larger (M6x20) hand screws to fasten the scene camera holder to the rod.

7. Tie the scene camera USB cable tightly to the stand use pieces of Velcro all the way down to the table along the scene camera rod.

8. Slide the guide bars into the holes on the side of the stand’s main body, and lock them into place by fastening the smaller (M6x15) hand screws. The purpose of the guide bars is to make sure that the participants’ arms do not occlude the eye tracker’s view of the participants’ eyes. The participants’ arms should be on the outside of the guide bars at all times.
9. Carefully push the flat holder straight into the hole in the center of the main body, until it snaps into place. Make sure that the holder can be turned both clockwise and counter-clockwise, and that it stays at 90 degree angles. There are two different mobile device holders available: one flat holder that is suitable for larger smartphones and tablets (for configurations A1, A2, C1 and, C2) and one bracket holder that allows the participant to hold smaller mobile devices more naturally and closer to the body (for configurations B1, B2, D1 and, D2).

10. Mounting a Pro X2–30 and Pro X2–60 eye tracker into position.

- Procedure
  1. Carefully place the eye tracker into the eye tracker slot at the bottom of the main body.
  2. Make sure the eye tracker is turned so that the Tobii logo can be read (not upside down).
  3. Push the eye tracker into the slot until it snaps into place. (You may need to manually adjust the eye tracker position to get it to snap into its correct place.)

Don’t try to mount a Pro X2–30 or X2–60 eye tracker into place when the adapter bracket is in place, and vice versa, don’t try to mount a Pro X3–120 or Pro Nano eye tracker into place without first fitting the adapter bracket. The eye tracker might fall down and break.

11. Mounting a Pro X3–120 and Pro Nano eye tracker into position.

- Procedure:
  1. Place the adapter bracket (see X3–120 Mounting Adapter) into the eye tracker slot and make sure it magnetically clicks into place.
  2. Carefully place the eye tracker into the eye tracker slot at the bottom of the main body.
  3. Make sure the eye tracker is not mounted upsidedown, the eye tracker’s USB port should be facing left.
  4. Push the eye tracker into the slot until it snaps into place. (You may need to manually adjust the eye tracker position to get it to snap into its correct place.)

As the Pro X3–120 eye tracker is wider than the X2 units, it is necessary to either turn the guide bars upwards, as in the image right above, or to remove them completely, to avoid interfering with the eye tracker’s cameras.
12. To make sure the eye tracker stays in place and avoid damage should someone pull the USB cable, fasten the USB cable with a piece of Velcro to the main body.

13. Attach USB cable
   - For the Pro X2–30/60 eye tracker: Attach the included USB extension cable to the eye tracker’s USB cable.
   - For the Pro X3–120 eye tracker: Attach the included 1.8 m USB 3 cable to the eye tracker’s USB port.
   - For the Pro Nano eye tracker: Attach the included USB extension cable to the eye tracker’s USB cable.

3.2 Attaching a mobile device

To attach the mobile device (or other tested object) on the Mobile Device Stand, use either adhesive mounting putty (left in picture) or the Nanopad (right in picture). The mounting putty will adapt to different shapes and textures, and stick more firmly while the Nanopad allows easier device mounting and removal.

To use the mounting putty:
   1. Knead a piece of the putty, large enough to cover the mobile device holder, to make it softer (it sticks better when soft).
   2. Firmly press the mounting putty on the holder and then gently press the device on top of the putty.

To remove the device, use a twisting motion (mild force) to avoid any damage to the device. The mounting putty can be reused many times. Makes sure that the putty does not get dirty to maintain its adhesive strength.

To use the Nanopad:
   1. Place the Nanopad on the mobile device holder.
   2. Gently press the device onto the Nanopad

To remove the device, gently lift the mobile device in one of its corners and it will come off slowly. The Nanopad is reusable and can be cut into smaller pieces to match the size of the mobile device.

⚠️ Handle the mobile device gently when attaching or removing it to avoid damaging to the screen or the device.

⚠️ Make sure the mobile device is securely attached to the mobile device holder otherwise it may fall off the holder and be damaged or even break.
3.3 Mounting the Calibration Plate

For each participant, the calibration plate needs to be mounted before calibration and dismounted before data collection. The calibration plate is used when calibrating a participant in Tobii Studio, Pro Lab or Eye Tracker Manager before each recording. The mobile device you intend to use during the test should be attached to the mobile device holder before mounting the calibration plate.

To mount the calibration plate:

1. Locate the appropriate calibration plate fixing rod. The short steel rod is used when the flat holder is mounted (configurations A1, A2, C1 and C2) and the long steel rod is used when the bracket holder is mounted (configurations B1, B2, D1 and D2).

2. Place the calibration plate fixing rod in the hole located below the hand screws that hold the guide bars.

3. Place the calibration plate on top of the mobile device. Make sure that the U-shaped cut out of the plate fits around the scene camera pole.

4. Adjust the calibration plate so that the holes cut in the calibration plate align with the two rods located next to the scene camera pole. Align the hole at the bottom of the calibration plate with the calibration plate fixing rod.

5. Once the holes are aligned with the rods, push the calibration plate down towards the mobile device until it is resting flat on top.

To remove the calibration plate:

1. Carefully lift the calibration plate from its fixed position, before removing it.
2. Remove the calibration plate fixing rod by pulling it straight out.

3.4 Adjusting the Tilt Angle of the Tobii Pro Mobile Device Stand

The Mobile Device Stand tilt angle can be adjusted to accommodate for different participant heights, positions and setups. The objective when adjusting the tilt angle is to make sure the participant is in the optimal position for the eye tracker. Each participant’s position should be examined and adjusted using the Track Status feature in Tobii Studio, Pro Lab or Eye Tracker Manager, before the calibration procedure starts.

*To adjust the tilt angle of the Tobii Pro Mobile Device Stand:*

1. Loosen the large hand screws on the sides of the main body.

2. Adjust the angle by turning the metal cylinder at the back of the main body. Turn clockwise to tilt the stand forward, turn counterclockwise to tilt the stand backwards.

   🔄 When adjusting the angle of the Mobile Device Stand be careful not to injure the test participant or yourself as there is a risk of objects or fingers being squeezed between moving parts. The scene camera holder can cause injuries if it strikes the head or other body parts.

3. Tighten the large hand screws on the side of the main body to ensure steadiness of the stand during testing.

3.5 Mounting the Eye Tracker Extension

In some testing scenarios the participants may be too far from the eye tracker (e.g. if the person is very tall or is sitting on a high chair). In such cases the eye tracker extension can be used to reduce the distance between the participants’ eyes and the eye tracker.

Having the participant sit farther away from the mobile device (possible when using the eye tracker extension) will enable eye tracking on larger devices. For a Tobii X2-30/X2-60 Eye Tracker the maximum participant gaze angle is 31° (see technical specification for further details on gaze angles), increasing the distance between the participant and the mobile device will improve the eye tracking data quality for larger devices. See illustration.
To mount the eye tracker using the eye tracker extension:

1. Place the eye tracker extension into the eye tracker slot where the eye tracker would normally be placed. Make sure the eye tracker extension is mounted as shown in the magnified illustration.

2. Lock the eye tracker extension into place with two small (M6x15) hand screws, screwed from the back of the eye tracker slot in the main body.

3. Carefully place the eye tracker into the slot on the eye tracker extension. Make sure the eye tracker is not turned upsidedown. Push the eye tracker into the slot until it snaps into place. (You may need to manually adjust the eye tracker position to get it to snap into its correct position.

   If using a Tobii Pro X3–120 or Tobii Pro Nano eye tracker you must attach the adapter bracket into the eye tracker slot before placing the X3–120 eye tracker into the slot. Also remember to either turn the side guides upwards or remove them completely so the eye tracker’s cameras are not obstructed (see Section 3.1).
4 Configuring Eye Trackers from Tobii Pro with the Mobile Device Stand

As described in section 2.1, the mobile device testing solution comprises of:

- Pro Mobile Device Stand
- Compatible eye tracker from Tobii Pro
- Computer for the eye-tracking software
  - Software to configure the eye tracker
  - Stimulus presentation and recording software

Compatibility Table

<table>
<thead>
<tr>
<th>Compatible eye trackers</th>
<th>Software for stimulus presentation and recording</th>
<th>Software for configuring the eye tracker</th>
<th>Operating system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobii Pro Nano</td>
<td>Tobii Pro Lab</td>
<td>Eye Tracker Manager</td>
<td>Windows</td>
</tr>
<tr>
<td>Tobii Pro X3-120</td>
<td>Tobii Pro Lab</td>
<td>Eye Tracker Manager</td>
<td>Windows</td>
</tr>
<tr>
<td>Tobii Pro X2-30/X2-60</td>
<td>Tobii Pro Lab/Tobii Studio</td>
<td>Eye Tracker Manager</td>
<td>Windows</td>
</tr>
</tbody>
</table>

4.1 Using Eye Tracker Manager to configure the eye tracker

The Pro Eye Tracker Manager allows user to configure the eye tracker for different setups, including the Mobile Device Stand, with additional features, such as the possibility of performing a calibration and evaluating the results.

Note! Use Eye Tracker Manager to install the latest driver and firmware for your eye tracker.

4.1.1 Installing Eye Tracker Manager

1. Download the application from the web (links: Windows)
2. Follow the on-screen instructions to complete the installation.

4.1.2 Accessing the configuration tool

1. Open Eye Tracker Manager. A list of the discovered eye trackers is displayed.
2. Click on the eye tracker you want to configure.
3. In the right panel, go to Display Setup.
4. At Select Setup, open the dropdown menu and click on “Create New”. A setup window appears.
5. Select Mobile Device Stand. A second setup window appears.
6. Select the Mobile Device Stand configuration you are using.
7. Your eye tracker has the correct display setup for eye tracking with the Mobile Device stand. Exit the program.

Continue your mobile device testing by setting up your stimulus presentation and recording software. Read section 4.2 for data collection with Tobii Pro Lab and section 4.3 for Tobii Pro Studio

4.1.3 Configuring the eye tracker manually

If you wish to setup your eye tracker manually, use the following procedure:

1. Open Eye Tracker Manager. A list of discovered eye trackers is displayed.
2. Click on the eye tracker you want to configure.
3. In the right panel, go to Display Setup.
4. At Select Setup, open the dropdown menu and click on "Create New". A setup window appears.
5. Select the option “Eye Tracker is not attached to the monitor”. A setup wizard appears.
6. Enter the parameters corresponding to your Mobile Device Stand configuration as listed in the table below.
7. If you have altered the position of eye tracker, relative to the display area, to better suit your study design, modify any of the measurements in the table accordingly.
   a. Measure the height, width and tilt angle of your display area, and enter the values in their respective fields, and click Next.
   b. Measure the tilt angle of the eye tracker, the distance to the display, and the height difference between the eye tracker and the display. Enter the values in their respective fields and click Next.
8. Name your preset and click on “Finish” to save it and to send it to the eye tracker.
9. Test your configuration by performing a calibration and verification test.

<table>
<thead>
<tr>
<th>Mobile Device Stand configuration for Tobii Pro X2-30/X2-60/X3-120 Nano</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Display Area</strong></td>
</tr>
<tr>
<td>Width of the eye-tracked surface</td>
</tr>
<tr>
<td>Height of the eye-tracked surface</td>
</tr>
<tr>
<td>Angle of the mobile device</td>
</tr>
<tr>
<td><strong>Eye Tracker</strong></td>
</tr>
<tr>
<td>Angle of the eye tracker</td>
</tr>
<tr>
<td>Horizontal difference between the top of the eye tracker and the lower end of the eye tracked surface</td>
</tr>
<tr>
<td>Vertical difference between the top of the eye tracker and the lower end of the eye tracked surface</td>
</tr>
</tbody>
</table>

If you had already created a preset and want to modify it:
1. Go to step 4 above
2. Instead of selecting "Create New", select the preset you wish to modify.
3. Click on the cogwheel to the right of the “Preset” list. The parameters appear.
4. Modify the parameters and save them.

### 4.1.4 Configuration parameters

All parameters are measured in relation to a reference point on the eye tracker hardware. That reference point varies depending on what eye tracker model you are using. Check the user’s manual of your eye tracker for details.

The wizard for when the Eye Tracker is not attached to the monitor has the following parameters.

- **Display area** — The correct display or stimuli size must always be added to the X Configuration Tool. The Active Display Area is represented by the area on which calibration is performed. For monitors, TV screens, and other displays, measure the size of the visible active area on the screen where you see the actual image. For projected displays,
measure the size of the visible projection on the display. In a setup where the stimuli are filmed by a scene camera, the active display area must be calculated from the relevant calibration grid size.

- **Display angle** — Measure the angle between the vertical plane and the active display with the digital angle meter. In a scene camera setup, measure the angle between the vertical plane and the calibration grid. If the display is tilted forward, enter a negative angle (put "-" in front of the value). If the active display is completely vertical, the angle value is 0. In a scene camera setup where you want to track objects on a horizontal table, the angle is 90 degrees.

- **Eye tracker angle** — Use a digital angle gauge or similar tool to measure the angle of the eye tracker. In many setups, the angle is around 25 degrees.

- **Height difference** — Measure the height difference between the measuring point on the eye tracker and the bottom of the active display area. If the active display is located below the measuring point on the eye tracker (for example, in a projector setup), the value is negative; enter the value in the X Configuration Tool prefixed with a "-".

- **Distance** — Measure the distance from the measuring point on the eye tracker to the front of the active display of the monitor, projection screen, or TV screen; or in a scene camera setup to the virtual screen. If the measuring point on the eye tracker is located behind the active display, enter a negative distance (put "-" in front of the value).

You ensure good quality of the eye-tracking data by measuring and specifying all the parameters accurately.

### 4.2 Recording eye-tracking data from mobile devices with Pro Lab and Mobile Device Stand

The Pro Mobile Device Stand solution only works with the “Scene Camera” project type in Pro Lab. Its Record module guides you through the procedure of selecting eye tracker and scene camera, performing a scene camera-based calibration, and managing your participants and recordings.

Before you start, check that you have installed the Mobile Device Stand’s scene camera, that is, Logitech HD Pro Webcam C920.

1. Insert the scene camera’s USB connector into a USB port on your computer.
2. Installation starts automatically. Follow the instructions of the installation guide.

Note: Because the driver is retrieved online, the computer needs an internet connection.

#### 4.2.1 Starting a scene camera-based recording

When you have created a new scene camera project, or opened an existing one, the Project Overview window appears on your screen. Open the Record module by clicking the Record option in the main menu bar.

Procedure for making a recording:

1. Check that the devices used for the recording are enabled and selected. They (e.g., the eye tracker, the Logitech HD Pro Webcam C920 scene camera, the HD Pro Wecam microphone, and TTL out port) are represented by cards at the top of the window. Note that there is no Timeline(s) in Scene Camera projects. See the Tobii Pro Lab user manual, section 6.5 Changing Device Settings for more information.

The Scene Camera card is only displayed when the Logitech HD Pro Webcam C920 camera is connected to the system.

2. Deactivate the Autofocus of the Logitech HD Pro Webcam C920 camera. If Autofocus is active during a recording, focus may shift and cause incorrect data mapping.
   a. Do X
   b. Do Y
   c. Do Z

3. Sound is recorded by a connected microphone by default. If you don’t want to record sound, set this on the Scene Camera card by clicking on the card and disabling the “Use audio” switch. If more than one microphone are connected to your system, select which one to use in your recording.

4. Select which participant you are recording. If there are no recordings with that person, click on the “+New” button and enter the name of the participant in the name field. If no name is entered, Pro Lab suggests one, such as “Participant1.”
5. Enter the recording’s name in the “Recording name” input field in the Recording section. If no name is entered, Pro Lab suggests a one, such as “Recording1.”

6. Start the recording by clicking the “Start recording” button.

When you use an eye tracker that is not attached to a monitor, it must be configured so that the application registers where the eye tracker is located in relation to the stimulus and what area is supposed to be measured. See section 4.1 above for more information.

If you disregard configuring the eye tracker, you will get incorrectly mapped data.

4.2.2 Moderating a scene camera-based recording

When a recording starts, the Pro Lab application window switches to the moderator view. It displays the video of the scene camera and informs the moderator whether the eye tracker is detecting gaze, whether the participant is positioned in a way that enables data collection, for how long the recording has been running, and what participant name and recording name are used. It also provides the moderator with a way of terminating the recording at any time.

4.2.3 Performing a scene camera-based calibration

You ensure good eye-tracking data by performing a calibration before starting data collection for analysis. Preferably, use the pre-made calibration plate that is included in accessories, because the MDS presets in Eye Tracker Manager are set up for it. If you use another plate, recalculate width and height and the horizontal distance.

This image is an example of a calibration board

The calibration controls are displayed in the Record module.

Procedure for performing a calibration:

1. Mount the calibration plate as described in section 3.3 above.
   a. Set the active area that you want to measure by moving the four purple markers to the corners of your calibration plate.
   b. Add the desired calibration points by dragging them from the small box in the top right corner of the window onto the calibration points marked on the calibration plate.
   c. When you are done, lock the calibration plane by clicking the pad-lock symbol on the right side of the window.
2. Start the calibration by clicking the “Calibrate” button. Two buttons appear: “Calibrate point” and “Abort calibration”.
3. The first calibration point is indicated. Instruct the participant to look at it. When she/he does it, press “Calibrate point”. Repeat this step for each calibration point.
4. You abort the calibration by pressing “Abort calibration”.

4.2.4 Ending a recording

A recording can either end when the last stimulus has been displayed or by an action of the moderator.
You stop a recording before the last stimulus has been completed by clicking on the “Stop recording” button in the moderator view or by pressing the “Esc” button on the keyboard.

A Scene Camera recording can only be stopped by the moderator, as the recording doesn’t follow a timeline.

4.2.5 Participants and Participant Variables

You use Participant Variables to filter data when generating visualizations, calculating eye tracking metrics and comparing the behavior of different participant groups. Variable and variable values are also included in the data export files for further statistical processing. Once created, you can select values for the participant variables when you edit your participants.

The participant variables are handled from the Participant card in the Record module in Pro Lab or from the Project Overview. You may define participant variables before or after recordings. A newly created participant will have all variables available which were defined prior, while when adding a new participant after you have defined some variables, the value for these and subsequently added participants will be “not specified”.

4.2.5.1 Adding a new participant variable

Procedure for adding a new participant variable:

1. If you work from the Record tab, click the “Edit variables” button. If you work from the Project Overview window, the Participant Variables panel is already visible and you can start adding participant variables.
2. If this is the first time you add participant variables, you see a “+ New” button for creating a new participant variable and a generic participant variable. If you already have participant variables defined for this participant, they are displayed, see the Tobii Pro Lab user manual, section 6.2.5.3 Editing an existing participant variable.
3. Enter the name of the first participant variable in the text field and press Enter.
4. Add a new value for the participant variable by clicking the “+” button. A field appears.
   a. Enter the name of the value.
   b. Add the wanted values by using the Add Value button.
   c. If the participant variable is supposed to accept multiple values, select the “Allow multi selection” check box.
   d. You can also add a new value by pressing Enter in a value field.
5. When you have added the desired values, you can add another participant variable by repeating steps 2–4d.

4.2.5.2 Creating a new participant

Procedure for adding a new participant:

1. Click the Plus sign and enter the participant’s name.
2. If there are already defined participant variables, select the values for the participants.

4.2.5.3 Edit a participant variable

Procedure for editing an existing participant variable in the Project Overview:

1. If you need to expand the desired participant variable, click on the down arrow below it or click on the “Expand all” button to display all participant variables.
2. Edit the desired data. When you are done, press Enter.
3. If you want to create new participant variables and values, see “.

Options for deletion:

• If you want to delete a value for a participant variable, click the trash can symbol to the right of the value.
• If you click the trash can symbol to the right of the participant variable name, you delete that participant variable and all of its values. A dialog box lists the affected participants.

4.2.5.4 Deleting a participant

Procedure for deleting a participant:

1. Find the desired participant and press the trash can symbol to the right of the participant name.
2. If there are existing recordings for this participant, Pro Lab lists those that are about to get deleted. If you want to keep these recordings, DON’T delete the participant.
4.3 Recording eye-tracking data from mobile devices with Tobii Pro Studio and Mobile Device Stand

Before you continue, make sure you have installed the latest version of Tobii Pro Studio on the Windows computer you intend to use.

The Tobii Pro Mobile Device Stand solution will only work with the stimuli type “Scene camera” in Tobii Pro Studio. Most of the configuration will therefore be done through the Scene Camera Element Setup dialog.

Procedure for installing the Tobii Pro Mobile Device Stand scene camera (Logitech HD Pro Webcam C920):

1. Insert the scene camera USB connector into one of the USB ports of the computer running Tobii Studio.
2. Installation will start automatically. Follow the installation guide. Note: Because the driver is retrieved online, the computer needs an internet connection.

Procedure for opening the Scene Camera Element Setup dialog in Tobii Studio:

1. Make sure the eye tracker and the scene camera USB cable are connected to the computer. (If you are using a Tobii Pro X2-60 Eye Tracker, the eye tracker USB cable should be connected to the external processing unit and the Ethernet cable should connect the external processing unit to your computer.)
2. Start the Tobii Studio Software and create a new project and a new test. (See Tobii Studio User Manual)
3. Select the Design and Record tab.
4. Drag and drop a Scene Camera stimuli to the Tobii Studio study timeline. The Scene Camera Element Setup dialog will appear.

Procedure for configuring the scene camera:

1. In the Scene Camera Element Setup dialog, select Logitech HD Pro Webcam C920 in the Video Source drop down menu. The preview will now show the scene camera feed.
2. While looking at the Preview, adjust the scene camera angle in the scene camera holder so that the entire Calibration Board is visible in the preview window.
3. To open Camera Settings Properties, click Camera Settings. The Camera Settings Properties dialog will appear and you can adjust a large number of camera settings. Most of these settings can be left as they are but we recommended that you verify and optimize the settings for your setup to get a good quality video recording of the mobile device. Autofocus should always be turned off and focus needs to be set manually.
4. To turn off autofocus, select the Camera Settings dialog to the left of the preview video. Select the Camera Control tab, then deselect the check box next to Autofocus. If the preview video is not in focus, move the slider to change focus and...
check the preview window to confirm the image is in focus. Make sure you check the focus by clicking New to see if the snapshot is sharp. (Click Zoom to enlarge the snapshot for more precise review.)

5. To open the Video Settings Properties dialog click Video Settings.

6. In the Video Settings Properties dialog enter the recommended settings:
   - Frame rate: 30
   - Color Space / Compression: RGB24 (Select MJPEG when using Morgan M-JPEG codec)
   - Output Size 1280x720 (up to 1920x1080 is supported).

7. Click OK: the dialog will close.

8. In the Scene Camera Element Setup dialog, select Microsoft video 1 in the Video Codec drop down menu.

About video codecs:

Video Codecs: Microsoft Video 1 is the only codec supported by default in Tobii Studio (pre-installed with Windows). This codec is recommended for getting started quickly without installing extra codecs or as a backup if other codecs cause any issues. The Microsoft Video 1 codec provides good quality output during Live Viewing but more compressed output during Replay. The quality of the output may be too low for detailed analysis. This codec is a good option if you are mainly interested in Live Viewing.

If you need better video quality than offered by Microsoft Video 1, we recommend that you download and install the Morgan M-JPEG codec, which will allow much higher video recording quality with reasonable, albeit larger file size output. A 60-day trial of Morgan M-JPEG can be downloaded for free; a small license fee is required for continued use. Please note that this codec is a third-party application tested by Tobii but not supported as part of the Tobii Studio software package. Before downloading and installing the Morgan M-JPEG codec, make sure your PC meets the system recommendations set by Tobii, as a synchronization offset may otherwise occur. The Morgan M-JPEG codec can be downloaded from http://www.morgan-multimedia.com Select Products, select Morgan M-JPEG Codec (not M-JPEG2000) and download the 32–Bit version. It needs to be added to the list of available codecs in Tobii Studio once the Morgan M-JPEG codec is installed.

Procedure for adding Morgan M-JPEG to the list of available codecs:

1. Open the Scene Camera Element Setup dialog as described in the beginning of this section
2. Click Edit in the Video codec section.
3. Move Morgan M-JPEG Compressor from the right column to the left column using the arrow (<) in the dialog box, click OK to confirm. Now Morgan M-JPEG codec is available in the Video Codec drop down list.

Procedure for configuring the Perspective Calibration:

1. Make sure the calibration plate is mounted on the Tobii Pro Mobile Device Stand.
2. In the Scene Camera Element Setup dialog, click New in the Perspective Calibration section. A snapshot of the calibration plate will appear in the Calibration Image window.
3. Click Zoom to enlarge snapshot. A new window will appear showing a larger image of the snapshot.
4. In the window showing the large snapshot, drag and drop the five small red squares to perfectly align with the dots on the Calibration Plate — there is one center dot and four corner dots and all of them should be aligned. (The window can be maximized to increase precision.)
5. Click OK to close the window when all dots align perfectly with the dots on the calibration plate.
6. Click OK in the Scene Camera Element Setup dialog to close it.

Anytime you move the scene camera or make adjustments to either the resolution or focus, make sure to create a new calibration image using “New” and readjust the calibration points.

Procedure for configuring the calibration procedure in Tobii Studio:
1. Open the Global Settings dialog box (Tools>Settings).
2. Select the Calibration tab.
4. Make sure Number of calibration points is set to 5 points.
5. Click OK to close the dialog.

4.3.1 Sound and User Camera

When collecting eye tracking data, it is often desirable to also record user sound, and sometimes even the user’s facial expressions. To be able to record facial expressions you must attach an additional webcam to your computer running Tobii Studio. Most webcams can serve as a user camera. However, we do not recommended using the same camera type for both scene camera and user camera, as this might cause conflicts in the software.

To record user sound:
1. Make sure you have configured the scene camera.
2. In the Global Settings dialog box in Tobii Studio (Tools>Settings), select the Screen and Video Capture tab.
3. Select the Audio checkbox.
4. In the Audio Source dropdown menu, select “Microphone HD Pro Webcam”.
5. Click OK to close the dialog.

To record user camera:
1. Make sure you have connected and installed the extra web camera that you want to use as user camera.
2. In the Global Settings dialog box in Tobii Studio (Tools>Settings), select the Screen and Video Capture tab.
3. Select the Record User Camera checkbox.
4. In the Source dropdown menu, select the camera that you intend to use as user camera.
5. Change camera and video settings according to your specifications. Use a resolution of max 640x480 to minimize the load on the computer. Use Microsoft Video 1 codec if you can for the user camera video.
6. Click OK to save the settings and close the dialog.
4.3.2 Running an Eye-Tracking Test

Doing an eye tracking test with the Tobii Pro Mobile Device Stand and the Tobii X2-30/X2-60/X3-120 Eye Tracker, is similar to other setups. Therefore, here we only go through in brief the steps of making a recording. The Tobii Studio Manual provides a detailed walk-through of how you make recordings in Tobii Studio. The sections below touch upon specific tips and recommendations pertaining to the Mobile Device Stand.

To get the participants into a good eye-tracking position, activate the Track status before starting the recording. You then monitor the participants’ position both when they position themselves in front of the eye tacker, and during the test. Recommendation: Handle the participants’ differing heights and postures by putting them in a height-adjustable office chair.

Procedure for starting the Track Status you can:

- Press Ctrl+T on the computer keyboard.
- Click Track Status in the View menu of Tobii Studio.

Adjust the chair and the Mobile Device Stand’s tilt angle so that the participant is positioned optimally for the eye tracker (e.g. the white dots showing the position of the eyes in the track status should be in the center or upper half of the black box, and the distance indicator should indicate a distance of around 60–65 cm). Data quality gets influenced by the participant’s position.

The picture displays a perfectly positioned participant (the eyes are in the center of the track status box).

Use the manual calibration routine in Tobii Studio for participant calibration with the Mobile Device Stand. You must therefore instruct the participants which calibration dot to look at during the calibration procedure.

Procedure for calibrating a participant:

1. Mount the calibration plate as described in Section 3.3 Mounting the Calibration Plate, page 10. Set Tobii Studio to use the manual calibration routine.
2. Click “Start Recording” and parse through the dialogs till you reach to the calibration procedure.
3. Before starting calibration, instruct the participant to focus on the center of the calibration plate.
4. For each calibration point, tell the participant to look at the matching dot on the calibration plate (e.g. “Please look at number …”). Progress to the next calibration point by instructing the participant to look at it and then pressing the space bar or the left mouse button.
5. Once the calibration result is satisfactory, proceed with the recording dialog procedure.
6. Press escape or F10 to stop recording.

If you make any changes to the Mobile Device Stand configuration you need to change the values to correspond to the new configuration in Eye Tracker Manager and save the changes to the eye tracker before you calibrate or record a new participant. If the scene camera is moved or if you make adjustments to either the camera resolution or focus, make sure to create a new calibration image in Tobii Studio using “New” in the Scene Camera Element settings and readjust the calibration points before you calibrate and record a new participant.

Please refer to Tobii Studio User Manual for more information on how to analyze data from a scene camera recording.