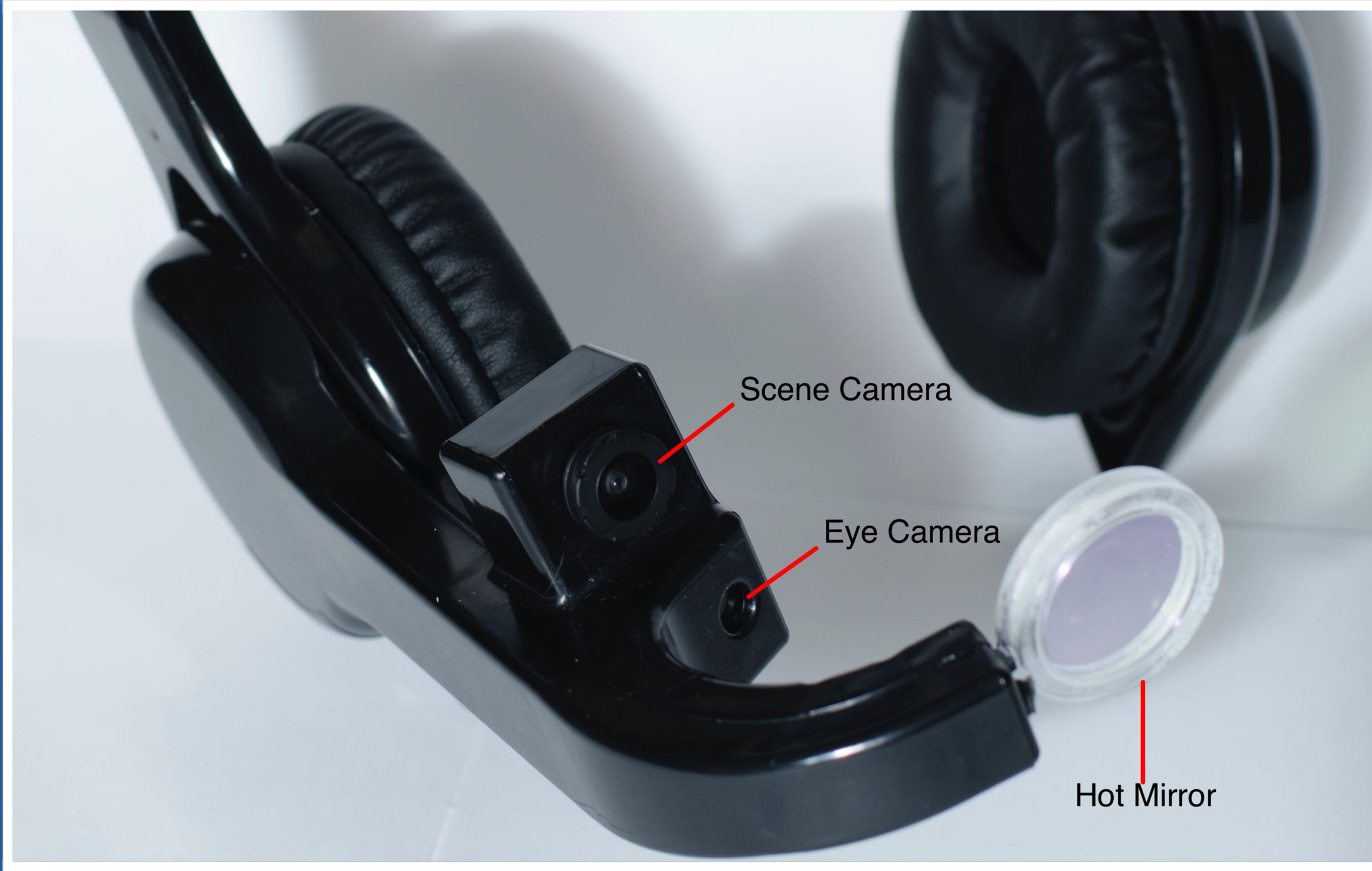


Using the EyeGuide Mobile Tracker

Part 1:

Acquiring Data Using EyeGuide Visualize



# Headset Hardware

# Headset Hardware

- The eye camera sees the user's eye reflected off of the hot mirror.
- You can adjust the headset headband (both sides pop out), the headset camera arm (rotation), and the hot mirror (ball-in-socket).
- Adjusting the headset camera arm also adjusts the angle of the scene camera.
- The scene camera is manual focus: turn the ring.

Plug everything in before  
turning on the unit.



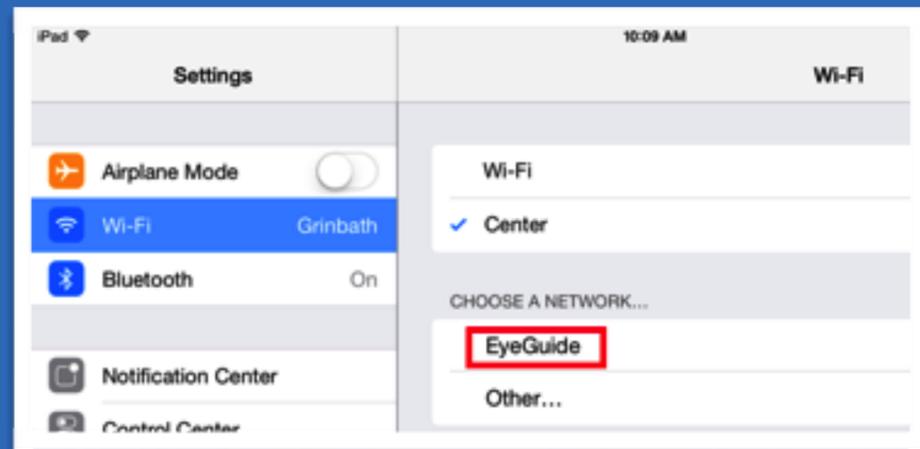
A fully charged battery (green light) gives you 5 hours of recording time.



# Download the software from our website.

- <http://download.eye.guide/>
- If you have an iPad, you can also search for EyeGuide Visualize in the App Store.
- Windows: Run the installer.
- Mac: Drag the EyeGuide folder (Visualize and Analyze) to your Applications folder.

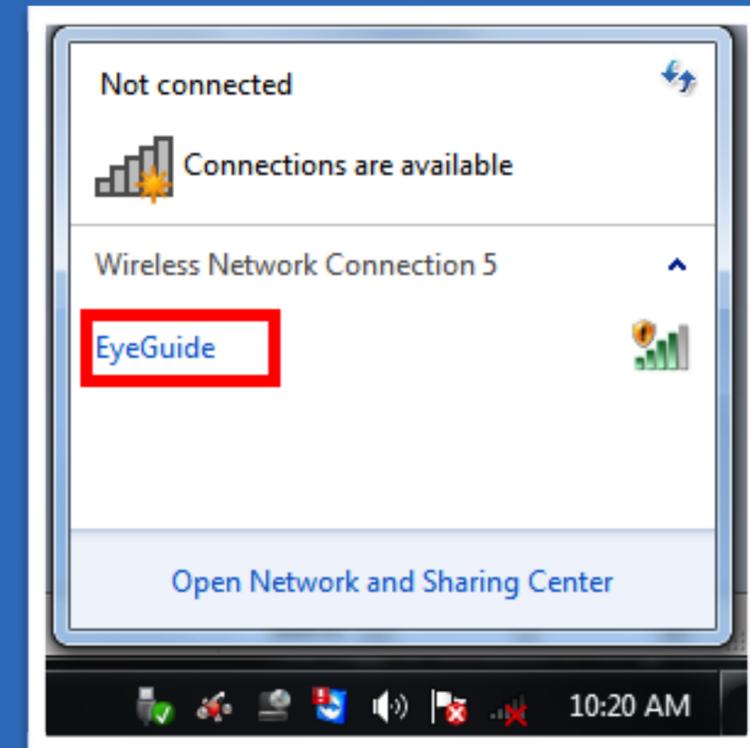
About a minute after powering on the unit, the EyeGuide wireless network is available.



iPad

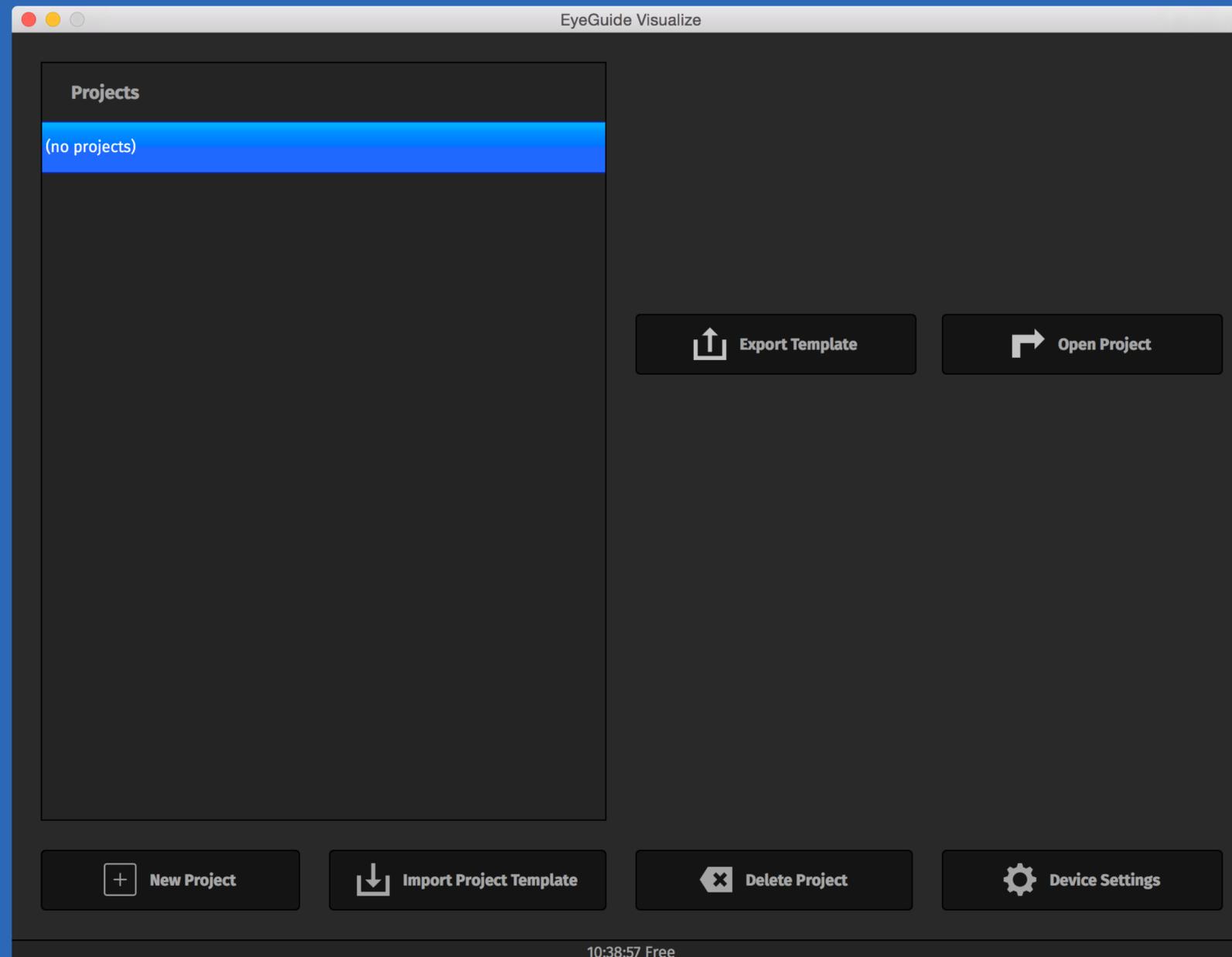


OS X



Windows

# Now you can open Visualize. To begin, click on New Project.



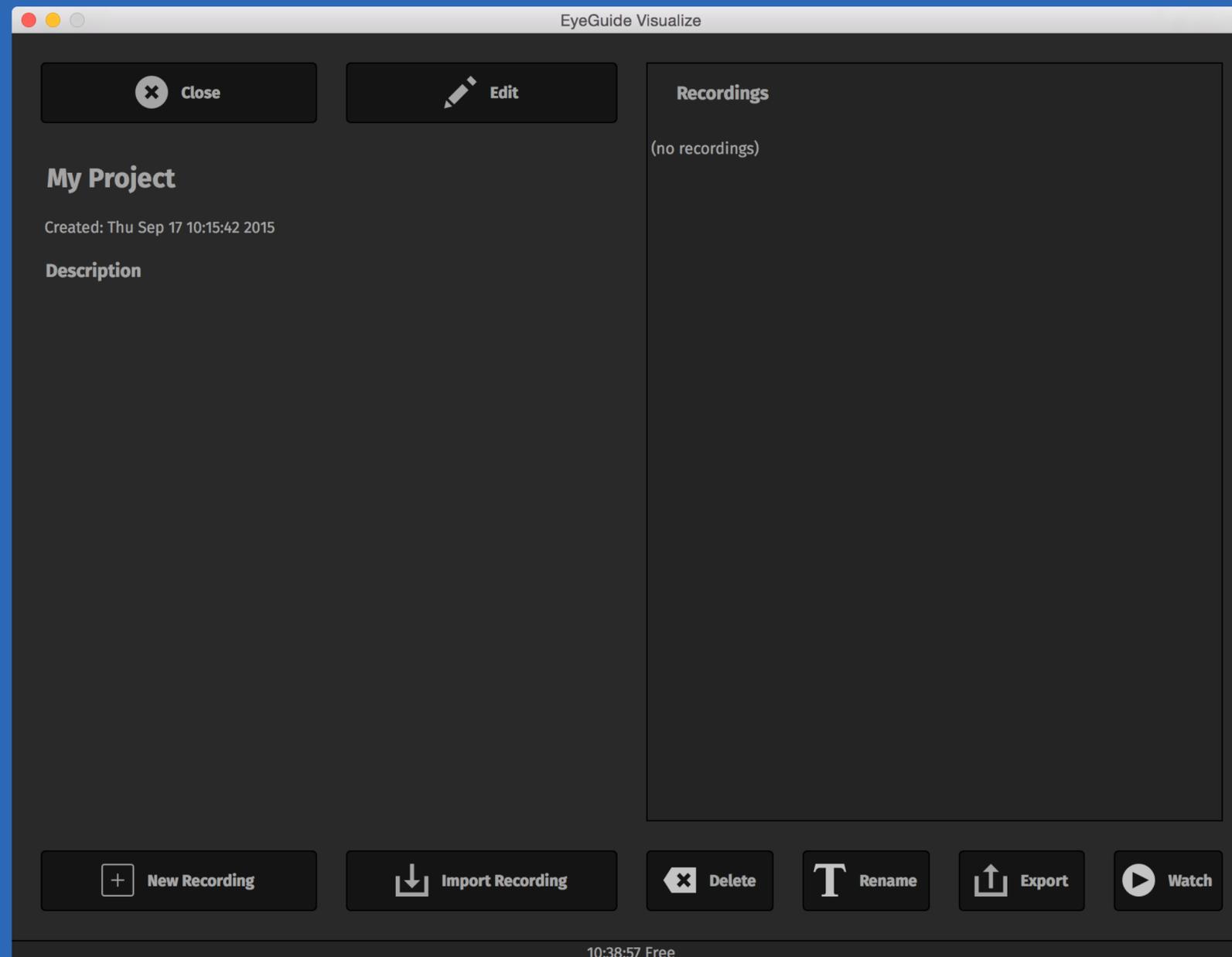
Most fields are optional.  
Be sure to check "Field" calibration.

The screenshot shows the 'EyeGuide Visualize' application window. At the top, there are 'Cancel' and 'Save' buttons. Below them is the 'PROJECT DETAILS' section with the following fields:

- Name:** My Project
- Description:** Please type a description of your project.
- Calibration:** Office (unchecked), Field (checked), Screen only (unchecked)

Below the calibration section is the 'User Data Fields' section, which contains five input fields labeled 'Demographic Data Field #1 (e.g., "gender")' through '#5'. To the right of these fields is a large text area divided into 'Task Description' and 'Task Instructions' tabs. At the bottom of the window, there are buttons for 'Delete', 'Up', 'Down', 'Edit', and 'New'. The status bar at the very bottom shows the time '10:38:57' and the word 'Free'.

# Now click "New Recording".



# Adjust the headset for the user.

## Make sure that:

- The user's pupil is being tracked (the green cross appears in its center)
- The scene camera is in focus, capturing the user's environment
- The headset is stable on the user's head – even the slightest movement will introduce point-of-gaze error

# Everyone's head is different.

- It may take some time to get the headset adjusted, especially if it's your first time doing it.
- It's worth it. The quality of data returned follows directly from the fit of the headset.
- Remember that the headset adjusts in four places – the head bands, the camera arm, and the hot mirror.

# Common Concerns

- The user's dominant eye does not matter.
- Often, the pupil can be tracked through glasses, especially with some fine adjustment of the camera arm. Before asking the user to take off their glasses, give it a try with them on. Contacts do not matter at all.
- The user's face is lit exclusively by two infrared LEDs in the corner of the camera arm; indoor lighting is ignored and does not matter. Bright/direct sunlight, however, may interfere with the eye tracker.

# Additional Hints

- If the user's eye does not seem to be well lit, try adjusting the camera arm – maybe even the head bands. The software can't track the pupil if it can't find it.
- When adjusting the hot mirror, try to get the user's pupil as close to the center of the image as possible. The software's search for the pupil starts there.
- Everyone's face is different. For some people, the headset just works – you don't even have to adjust it. For other people, it may take a long time to get it right. Also, you get better at it the more you do it.

# Once the headset is adjusted, hit "Begin Calibration"

Cancel ? Help

• Please adjust the hot mirror so that the user's eye is in the center of the image. You should see a green cross in the center of his or her pupil.

• If you are using on-screen calibration, also adjust the camera arm so that the computer monitor is near the center of the scene image. Make sure that the scene camera image is in focus.

• If you are using screen recording (checked under Project Details), make sure that the monitor is detected and shaded blue.

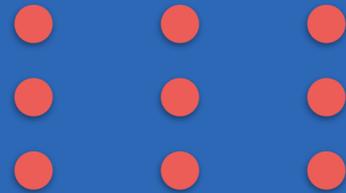
• Remind the user not to move his or her head after you have pressed the **Begin Calibration** button.

Begin Calibration

10:38:57 Free

# Nine-Point Calibration

- It's important that the user keep their head as still as possible during calibration. Otherwise, the calibration will not be accurate.
- Ask the user to look at the points in a 3x3 grid, one at a time. When the user confirms that they are looking at a point, click or tap the point on the screen. A red dot will grow to show that the point is being recorded.



- If you make a mistake, just hit cancel and try again from the start.

# Calibration Hints

- For accuracy over the widest visual range, try to fit the 3x3 grid to the actual workspace of the user during the test. For example, if the user will be working on a whiteboard, use post-it notes on the board to mark the nine points. If they will be working on a computer or tablet, try using the corners and center of its screen.
- The points should be at the same distance from the user (depth) as the actual test. Otherwise, you will have to adjust the gaze offset after the test in Analyze due to parallax error (more on this later).

# Calibration Results Screen



# Calibration Results Screen

- You want the crosses to line up. If the user looks at one of the nine points again, the second cross will be where the system records them looking.
- The colors (green to yellow to red) allow you to accept up to a standard amount of calibration error for the study.
- If one point seems way off, the user probably blinked or wasn't really looking at that point. It's also possible that the software can't find the pupil when they are looking over there. You can check for this problem on the headset adjustment screen.

# Recording

- If you are satisfied with the calibration result, click or tap "Begin Recording". You should see the target reticle icon over the user's point-of-gaze in the live feed from the scene camera.
- The user can now move their head, but the headset should not slip or otherwise move on their head.
- The calibration is good for the area covered by the nine points as long as the headset does not move.

# Recording

- Sometimes, the headset will slip forward down the user's face. You can tell this is happening because the point-of-gaze will appear above where they are actually looking. Make sure the headset is adjusted tight on the user's head before the test begins.
- The live feed from the scene camera is lower quality than what is actually being recorded for later playback. This is to cram as much data as possible into the wireless link.
- When you are done recording, hit "End Test" and give the Recording a name.

# On-Screen Calibration

The screenshot shows the 'EyeGuide Visualize' application window. At the top left is a 'Cancel' button and at the top right is a 'Save' button. Below these is the 'PROJECT DETAILS' section. The 'Name' field contains 'My Project'. The 'Description' field has a placeholder text 'Please type a description of your project.'. Under the 'Calibration' section, three radio buttons are visible: 'Office' (which is selected and highlighted with a red box), 'Field' (which is also selected), and 'Screen only'. Below the calibration section is the 'User Data Fields' section, which contains five text input fields labeled 'Demographic Data Field #1 (e.g., "gender")' through '#5'. At the bottom of the window, there are five buttons: 'Delete', 'Up' (with an upward arrow), 'Down' (with a downward arrow), 'Edit', and 'New'. The system clock at the bottom center shows '10:38:57 Free'.

- Click the "Edit" button from the main Project screen to go back to the Project Details screen.
- Change "Calibration" to "Office" and click "Save".

# On-Screen Calibration

- With this type of calibration, the nine points are presented automatically to the user.
- It is best suited to on-screen research.
- The scene camera must be pointed at the screen running Visualize before calibration begins. Otherwise, calibration will error out.
- Try to get the screen in the center of the image from the scene camera. Remember to focus the scene camera. It helps to have some small text up on the screen.

# On-Screen Calibration

- Make sure the room is well lit. Indoor lighting doesn't affect the eye camera, but it does affect the scene camera. You don't want the screen to be washed out.
- Unless you have access to a jumbo HDTV, the screen will be very small compared with the whole visual field captured by the scene camera.
- If the user's gaze moves outside of the area of calibration, the software will extrapolate it, but it will not be as accurate as inside the nine point grid.

# On-Screen Calibration

- **Important to remember:**

Prefer Field calibration unless you are sure you don't care about anything outside of the screen.

# Screen-only recording

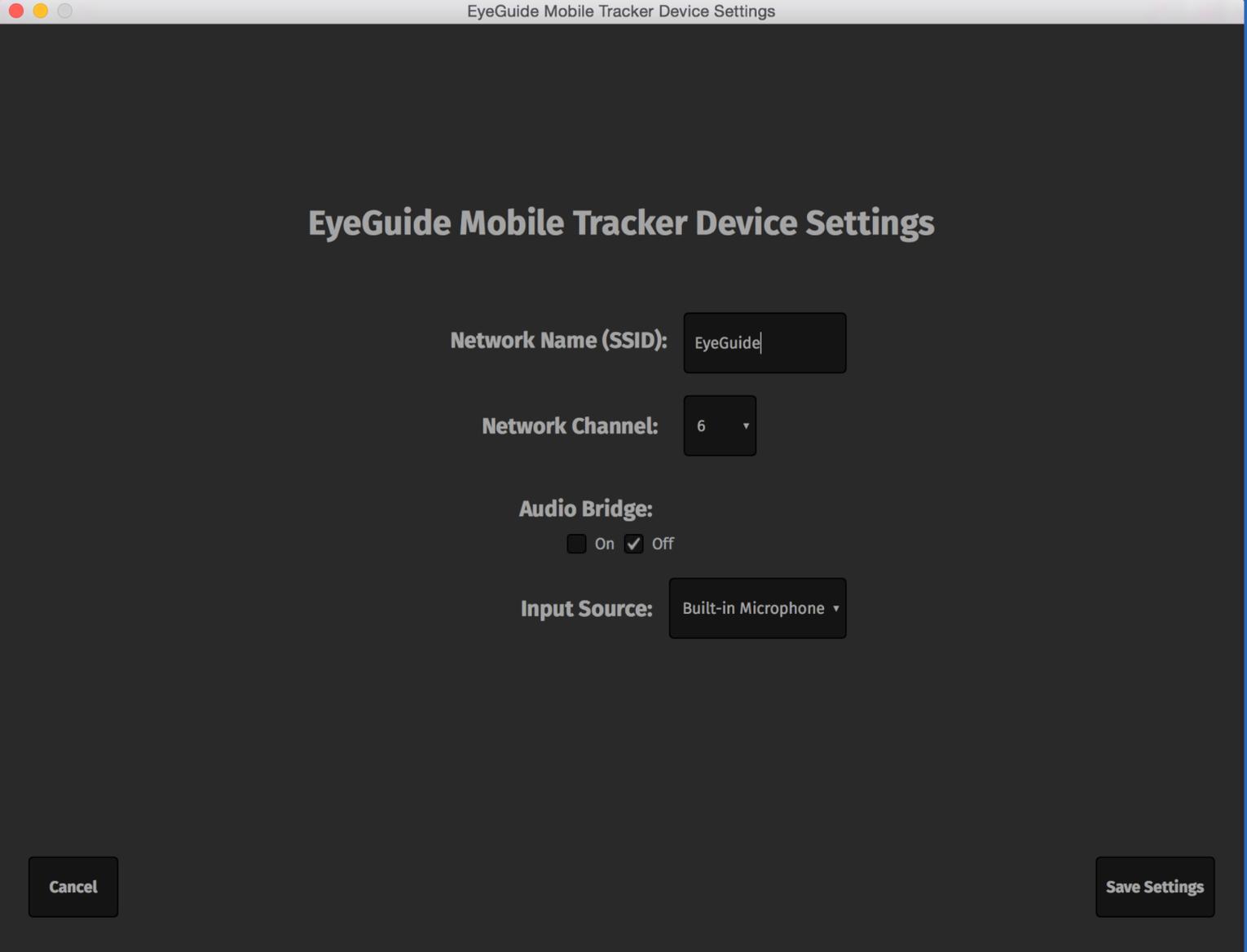
- On the Project Settings screen again, check "Screen only" next to "Calibration". Then click "Save".
- Like "Office", this recording type also uses on-screen calibration.
- Unlike "Office", only the screen is recorded, similar to a Camtasia screen capture video.
- The software has to translate the user's point-of-gaze to on-screen pixel coordinates, so it is not as accurate as "Office".
- It also depends on the software finding the screen in the first place. You can tell whether it's found the screen because the screen will be covered with a translucent blue rectangle. It uses the bright green border that appears around the screen to track it. If the software can't find the screen, no accurate point-of-gaze will be recorded.

# Screen-only recording

- Use "Screen only" when you absolutely must read tiny text on the screen after the test.
- It may be better to use "Office" recording and record the screen separately using e.g. Camtasia.
- *The best way to know for sure is to experiment and evaluate the results for yourself.*

# Device Settings

- Click on "Device Settings" from the main Visualize screen.
- Here you can change some settings, useful if you are using more than one unit at a time.
- You can give the unit a different wireless network name and change its wireless channel number.
- Only channels 1, 6, and 11 do not overlap.
- If you enable the Audio Bridge, you can speak to the headset wearer through a microphone or pipe in music or white noise.



The screenshot shows a web browser window titled "EyeGuide Mobile Tracker Device Settings". The interface is dark-themed and contains the following settings:

- Network Name (SSID):** A text input field containing "EyeGuide".
- Network Channel:** A dropdown menu currently set to "6".
- Audio Bridge:** A toggle switch with "On" and "Off" options. The "Off" option is selected.
- Input Source:** A dropdown menu currently set to "Built-in Microphone".

At the bottom of the window, there are two buttons: "Cancel" on the left and "Save Settings" on the right.

**Thank you!**

**Questions?**