Use Case 1: Setting Up the EEG Session

Primary actor(s): User

Stakeholders and interests:

- User: Wants an easy setup process to start monitoring EEG sessions.
- Device Manufacturer: Company that provides the device and ensures that it is shipped once it is user-friendly, and safe.
- Therapist/psychologist:

Precondition(s): User has the Neureset system, which includes an EEG headset and the handheld device.The device is charged, and EEG sensors are available.

Success guaranteed: Device correctly displays the main menu, and users can initiate a new session smoothly by following the instructions.

Main success scenario:

1. User places the EEG headset with 21 electrodes on their head correctly
2. User powers on the EEG handheld device
3. The main menu displays the three options: new session, session log,date and time setting
4. User selects the "new session" option to begin a new EEG session.

Extensions:

1a. Missing component:

1a1. User identifies the missing component by cross-checking with the list provided in the instruction manual.

1a2. User contacts the manufacturer or returns to the point of purchase to acquire the missing component.

2a. Device does not power on:

2a1. User checks the power source and ensures the device is connected correctly.

2a2. User examines the device's charging cable and port for any damage and tries a different power source if necessary.

3a. Improper fit of EEG headset:

3a1. User consults the instruction manual to adjust the EEG headset for a proper fit.

3a2. If discomfort or improper fit continues, the user seeks alternative fitting options or contacts customer support for assistance.

Use Case 2: EEG Session Process

Primary actor(s): User

Stakeholders and interests:
- User: Wants an easy setup process to start monitoring EEG sessions.
- Device Manufacturer: Company that provides the device and ensures that it is shipped once it is user-friendly, and safe.

Precondition(s): The device is set up correctly with full contact between the EEG electrodes and the user's scalp, date and time are correctly configured, the user is ready to start a new session.

Success guaranteed: Session starts and progresses correctly, there is real-time feedback provided to the user through the handheld device.

Main success scenario:
1. The user waits for the device to indicate contact is initiated by the blue light.
2. Session begins with a timer and progress bar always being updated
3. The device ensures good electrode contact and starts establishing a baseline frequency at the first EEG site.
4. The device delivers a one-second treatment with the predetermined offset frequency.
5. A green light flashes indicating treatment is being delivered
6. The therapist repeats the process at the next EEG site until all 21 sites have received treatment or until the therapist deems it sufficient
7. During the session, the user can pause, and the session will be resumed as long as contact is reestablished within 5 minutes.

Extensions:

1a. Improper electrode contact indicated:

1a1. User adjusts the position of the EEG headset to ensure proper contact between the scalp and electrodes.

1a2. If the issue persists, the user cleans the contact points or re-wets the electrodes if necessary.

2a. User feels discomfort during the session:

2a1. User pauses the session using the handheld device and adjusts the EEG headset or their position.

2a2. If discomfort continues, the user stops the session and consults the troubleshooting section of the manual or seeks advice from a healthcare professional.

3a. Session unexpectedly interrupts:

3a1. User checks the device for any error messages or alerts and addresses the specific issue if identified.

3a2. User restarts the device and session, if possible. If the device does not respond, the user consults the user manual or contacts customer support.

Use Case 3: Disconnecting the EEG Session

Primary actor(s): User

Stakeholders and interests:
- User: Needs to ensure continuous session monitoring and avoid data loss.
- Clinicians: Interested in minimizing interruptions for accurate session analysis.

Precondition(s): The user has completed a session using the Neureset system.

Success guaranteed: The user has successfully finished the session with every thing going to plan.

Main success scenario:
1. Once the neurofeedback session is completed, the user will receive a notification from the device indicating the end of the session.
2. The user removes the EEG headset and turns off the handheld device, following the correct procedure as outlined in the manual.
3. The user connects the handheld device to a PC using a USB cable and uploads the session data for review.
4. The user examines the session log history, noting the dates and times of sessions and observing the changes in dominant average frequencies at each EEG site.

Extensions:

1a. Device fails to turn off:

1a1. User holds down the power button for a longer duration as instructed in the manual to force shutdown.

1a2. If the device still does not turn off, the user removes the battery if possible, or waits for the battery to drain, then recharges and restarts the device.

2a. Data transfer issues:

2a1. User ensures that the USB cable is properly connected and the device is recognized by the PC.

2a2. If problems persist, the user tries a different USB cable or port, restarts both the device and the PC, or updates the device driver software.

3a. Inability to interpret session data:

3a1. User refers to the instruction manual for guidance on reading and understanding session data.

3a2. If clarity is not achieved, the user contacts customer support or consults with a neurofeedback therapist for a detailed explanation and advice on next steps.

Use Case Diagram: