Device Use Cases

Use Case #1: Normal Operation of Treatment with Neureset Device
- Primary Actor(s):
  - Device User
- Stakeholder and Interests:
  - User wants to initiate a neurofeedback treatment with the device.
- Precondition(s):
  - Neureset device has enough charge and functions properly.
  - The EEG headset is connected to the Neureset device.
  - The user has properly placed the EEG headset.
- Success Guarantee(s):
  - The session is successfully initiated and completed.
  - User is shown the current session duration and completion.
  - The device correctly reads signals from each of the 21 EEG sites, establishes a baseline frequency, and delivers the treatment according to the LENS protocol.
- Main Success Scenario(s):
  1. The user starts a new session through the device menu.
  2. Device opens a timer once contact with the electrodes is established, indicated by the blue light.
  3. Device calculates the overall baseline for all 21 EEG sites concurrently at the start of the session.
  4. Device calculates the baseline average frequency for each EEG site over approx. 1 minute each.
  5. Treatment starts, adds an offset frequency of 5hz to the baseline frequency, and recalculates the brainwave frequency every 1/16th of a second, 16 times (duration of a second).
  6. Green light flashes during treatment delivery.
  7. Device progresses through all 21 EEG sites, repeating the treatment process.
  8. Device calculates the overall baseline for all 21 EEG sites concurrently at the end of the session.
  9. The user is informed about the session progress and completion.
  10. Session completes when all sites have been treated, and the timer stops or the user stops treatment.
- Extensions:
  - The user can pause the session voluntarily.

Use Case #2: View Therapy History with PC
- Primary Actor(s):
  - Device User
- Stakeholder and Interests:
  - User wants to view reading on their pc.
  - Device company wants users to see their data.
- Precondition(s):
  - Device is on.
  - User has already completed some treatment.
- Success Guarantee(s):
  1. Therapy history is displayed on pc and on device
  2. Main Success Scenario:
  3. User presses Session Log history menu button
  4. User Selects option to upload to PC
  5. User Selects "Yes"
  6. Therapy history is displayed on pc showing before and after baselines including date and time
- Extensions:
  - 2. User Selects Preview logs
    - User Selects "YES"
      - Preview Session Logs are shown on device
    - User Selects "NO"
      - User is sent back to Session Log menu
  - 3. User Selects "NO"
    - Session Logs are cleared from pc and user is sent back to session logs menu
  - 4. User has no therapy sessions
    - "No logs" displayed on pc and device

Use Case #3: Receive Battery Low Response of the Device
- Primary Actor(s):
  - Device User
- Stakeholder and Interests:
  - User wants to successfully use device
  - Device company wants to ensure "Battery low" message is displayed so user does not encounter unexpected shutdowns
- Precondition(s):
  - Device is on.
  - Device has more than 20% battery
- Success Guarantee(s):
  - Device displays a "Battery Low" message at 20%
- Main Success Scenario:
  1. Device battery reaches 20%
  2. Device displays a "Battery Low" message

- Extensions:
    - o   1a. Device battery reaches 0%
        - Device powers off

Use Case #4: Receive Connection Loss Signal between Electrodes and Device
- Primary Actor(s):
    - o   Device User
- Stakeholder and Interests:
    - o   Device informs user that connection is lost with electrodes through red signal
    - o   User wants to know when connection is lost
- Precondition(s):
    - o   Device is on
    - o   Electrodes have established a connection with the device
- Success Guarantee(s):
    - o   Red signal is on when connection is lost with the electrodes and the device starts beeping
- Main Success Scenario:
    1. User is currently under treatment.
    2. Connection is lost with the electrodes and the red signal flashes.
    3. The session is paused and the device starts beeping until connection is reestablished.
- Extensions:
    - o   3a. If connection is not reestablished after 5 minutes, the device turns off automatically
        - The session is erased

User
- Request PC Upload
- Starts new Session

Battery
- Reaches 20%

EEGs
- Disconnects

<<system>> Device
- Uploads therapy history to PC
- Informs user about session progress
- Calculates baseline frequency
- Delivers treatment
- Displays "Battery Low" Message
- Displays red signal and starts beeping

PC
- Displays Therapy history