

**COMP-3004
Final Project
Team - 30**

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USE CASE NAME: Basic Use Case

Description	User uses the CES device for their required therapeutic intervention
Primary Actors	CES User
Stakeholders & Interests	CES User, CES Device Manufacturer
Pre-Condition	CES Device is sufficiently charged and is functioning as intended when manufactured
Success Guarantee	User completes their therapy safely with their preferred configuration
Main success scenario	<ol style="list-style-type: none">1. User presses and holds the power button to turn on the machine2. The device turns on and displays the battery level on a bar from 1 to 83. The user then selects a session group by navigating through them by just pressing the power button4. The user then can select a session type using the up and down arrow keys5. Before starting the session, the user should click the left(L) and right(R) buttons to connect the clips to create a connection. System will test for a stable connection before each session6. After the session has started the user should select intensity of the session from 1 to 8 with the help of the up and down arrows7. After the session is completed, the user's selected session preferences will get saved in history for later use if the user requires it
Extensions	3a. If user selects the custom session group, then they will be responsible to end the session when they want or the session will end when the device runs out of battery

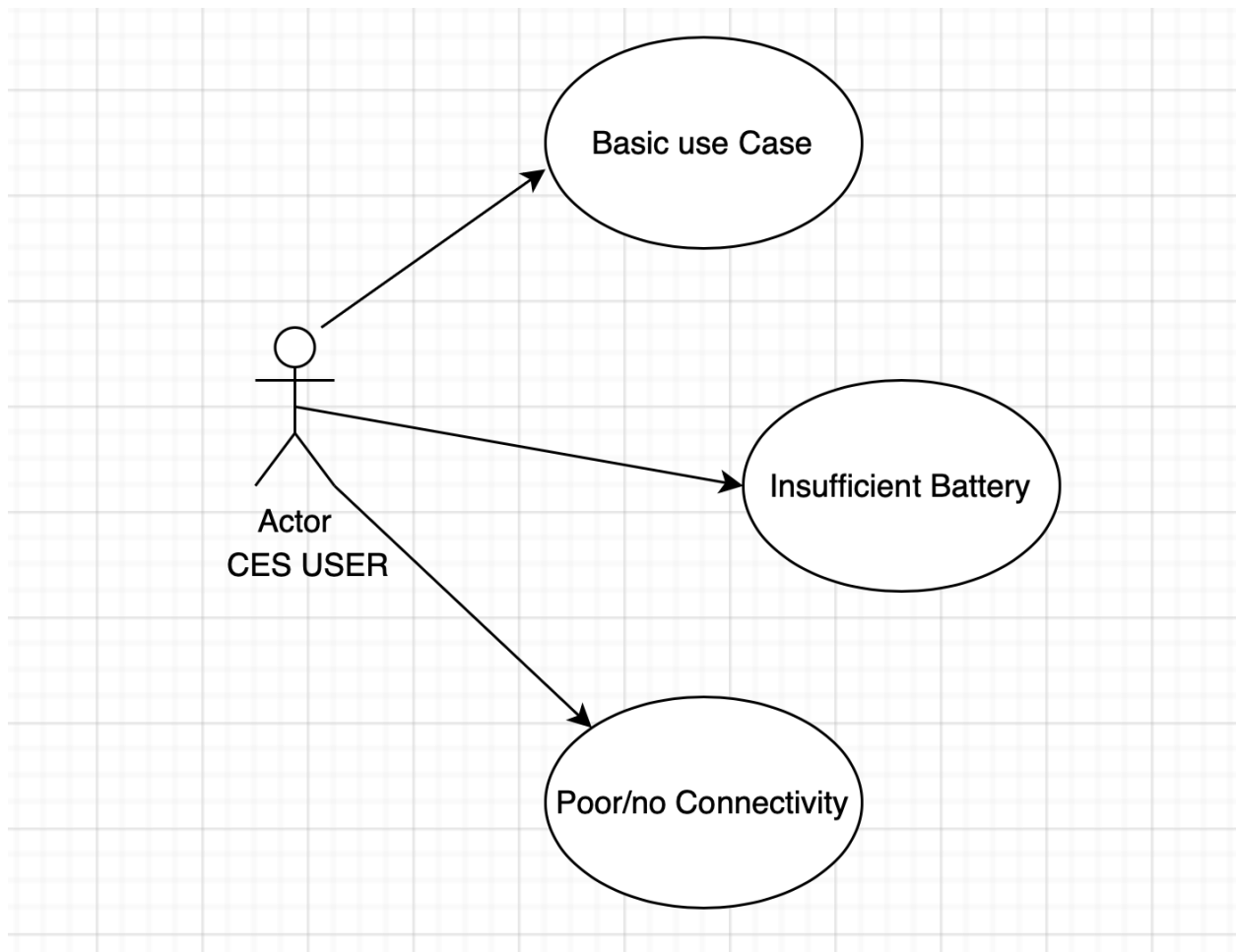
USE CASE NAME: Insufficient Battery Use Case

Description	User uses the CES device with low or insufficient battery
Primary Actors	CES User
Stakeholders & Interests	CES User, CES Device Manufacturer
Pre-Condition	CES Device is functioning as intended when manufactured
Success Guarantee	User completes their therapy safely with their preferred configuration
Main success scenario	<ol style="list-style-type: none">1. User presses and holds the power button to turn on the machine2. The device turns on and displays the battery level on a bar from 1 to 8 and the battery level is at 2 bars or lower3. Continue with Basic Use Case if the user has resolved the battery issue
Extensions	<p>2a. If the battery level is at 2 bars, then it is recommended that the device battery be replaced before running a session</p> <p>2b. If the battery level is at 1 bar, then the device's battery must be replaced immediately before the device is used again</p>

USE CASE NAME: Poor/NO Connectivity Use Case

Description	User uses the CES device with NO connectivity
Primary Actors	CES User
Stakeholders & Interests	CES User, CES Device Manufacturer
Pre-Condition	CES Device is functioning as intended when manufactured
Success Guarantee	User completes their therapy safely with their preferred configuration
Main success scenario	<ol style="list-style-type: none">1. User presses and holds the power button to turn on the machine2. The device turns on and displays the battery level on a bar from 1 to 83. The user then selects a session group by navigating through them by just pressing the power button4. The user then can select a session type using the up and down arrow keys5. Before starting the session, the device will automatically test for connectivity and indicate there is NO connectivity for this session6. Continue with Basic Use Case if the user has resolved the connectivity issue
Extensions	<p>5a. As the connection is not EXCELLENT or OKAY, then it will flash the 7 and 8 red bars when the user tries to start a session indicating NO connection</p> <p>5a1. The user has to reconnect both the left and right clips properly and restart the session to preserve optimal connectivity</p>

Use Case Diagram.



TRACEABILITY MATRIX

ID	Requirement	Related Use Case	Fulfilled By	Test	Description
1)	The application interface contains buttons and displays.	N/A	MainWindow.ui mainwindow.cpp	Run the simulator in Qt to observe the ui.	Using QT's built in user interface framework, the Oasis Pro control panel was created; all buttons are clickable and perform the desired use case.
2)	Turn On and Turn Off the device	Baic Use case	MainWindow.ui mainwindow.cpp	Press the power button for 5 seconds to turn on or off the device.	Using QT's framework, the power button is created which can turn on and off the device, and when the device is turned on the color of buttons will light up.
3)	Ending a session	Basic Use case	MainWindow.ui mainwindow.cpp session.cpp	Press the power button for at least 5 seconds to end the session	When the power button is pressed for 5 seconds, the device will turn off and the session will be ended by itself, it can be checked by tuning on the device again and checking the history tab.
4)	Battery depletion	Baic Use case, Insufficient battery use case	MainWindow.ui mainwindow.cpp	Turn the device on, you will see the current battery level on the terminal. Select any session and group. Once the session is ended, turn the device On again the new battery level will be printed.	<p>Battery depletion is calculated on the basis of this formula</p> $\text{BATTERY_DRAIN} * \text{ConnectionStatus} * \text{intensity} * \text{duration (min)}$ <p>Battery_Drain is a constant which has value 0.026.</p> <p>One 20 min session with excellent connection</p>

					status and with the intensity of 8 will deplete 1 bar which is equal to 12.5%.
5)	Selecting a Group	Basic Use case	MainWindow.ui mainwindow.cpp	Once the device is on, hit the power button again to select the group, to change the group type you can press the power button until you reach the desired group.	<p>When the power button is hit (Less than 5 seconds) the group selected will light up and then you can keep shifting the group or select the session.</p> <p>There are three group types, 20 minutes, 45 minutes and the user's custom minutes (Which only end if the battery runs out or user turns off the device).</p>
6)	Selecting a session	Basic Use case	MainWindow.ui mainwindow.cpp Session.cpp	One the group is selected, intensity up and down buttons can be used to change the type of sessions selected.	<p>When the intensity up or down button is hit, the session type will change, you can notice the selected session lights up.</p> <p>There are 4 session types, Met, SubDelta, Delta and Theta.</p>
7)	Checking the connection	Basic Use case, Poor Connectivity Use case	MainWindow.ui mainwindow.cpp	<p>You have to press the right and left icon buttons on the top right corner of the device to check the connection.</p> <p>When the session and group is selected and connection test icons are pressed, after pressing the "Tick" icon the bars in the middle start to blink.</p>	Bars in the middle blinks if 1,2,3 bars are blinking that means connection is excellent, 4,5,6 are blinking, connection is okay, and if 7,8 is blinking that means the user should reconnect the clips and try again.

8)	Selecting/Changing the intensity	Basic Use Case, Insufficient Battery use case	MainWindow.ui mainwindow.cpp session.cpp	When a session is running, you can change the intensity using up and down errors.	By default, intensity is set to 1, it can be changed using up and down buttons on the left. The maximum intensity allowed is 8 and minimum is 1.
9)	Recording the user's therapy	Basic Use Case	MainWindow.ui mainwindow.cpp record.cpp	Recordings are done automatically, after the device is turned off (after running a session), you can turn on the device again and press the history button to view history.	Recordings of all the therapies are being recorded by the "history" button on the top right corner.

UML:

