**Some thoughts about the setup used for Unlock recordings**

* Standards for databases
* Standards for paradigms
* BCI 2000 standards
* European German BCI standards
* Italian tablet BCI standards

1. It is required a check list before a paradigm is run. The purpose is to allow anyone without experience to help with the setup and have everything ready before the recording, avoiding delays and wasting time. This document could include:

**RSVP**

Predict words…GPS…

* Create a record in excel with all subject IDs, paradigms, setup, and dates of recordings (no names or identifiable information). Also include comments regarding problems and fixes **(DONE)**.
* Check the code to be used is at its latest version and properly saved. Any associated toolboxes as well.
* Check the registration dongle and bluetooth USB adapter are connected.
* Run a dummy session (the code should have a test mode), helps for software and hardware testing.
* The type of EEG recording devices (mobilLab, Enovio, etc...) must be included in the config. files and saved along with all the data.
* Check the EEG cap connections to the amplifier are okay.
* Check the number of electrodes and the cap’s mapping to the amplifier input channels are the correct ones (i.e. to avoid labeling channel 1 as Cz when it really is O1).
* Always associate the cap-amplifier chs. mapping to the data in a configuration file that is saved with the data.
* I have noticed sometimes the caps are not very well cleaned so check it is, at least one day before the recording (cleaning it the very same day gets it all wet; not good for our purposes).
* Collect the subject’s information prior the recording: handiness, age, sex, visual aids (glasses?), BCI experience, and give a code to that subject (which should be input in the Unlock framework at the beginning of the session so all data and config. files saved have this subject’s flag).
* Check all available channels are recorded, including events and time stamps so offline analysis can be done (allows reproducing the results obtained online).

1. The day of the recording:

* Put the EEG cap following its checklist and never do it on you (always have someone else helping <https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxiY2lncm91cHdpa2l8Z3g6MzZiMWEzNmNjYTg5Y2RkNw>
* Upon starting the session the code must prompt (and wait for the user’s acknowledgement) the recording device, subject ID, number of channels, sampling frequency and name of the file where all data will be saved. The purpose is to double check this info is correct.
* Baseline recording:

Run a baseline block to determine the electrodes with more noise and more sensitive to artifacts. This is useful in post-processing and offline analysis. Basically it is required to tell the subject to close the eye so alpha is recorded; moving the eyes up, down, left and right; blinking fast; blinking slowly; clenching the mouth; swallowing; and talking. All these events are cued (the commands and event times should be saved with the data), so it is easier to parse them offline (or even online once an artifact removal algorithm is implemented),

* Define the instruction given to the subjects (if any). I recommend writing down and reading them to the subjects before the start of the session. This way all the subjects are given the very same instructions, always. The instructions for the baseline block should be presented in the screen.
  + Here is very important to define if the subjects will fixate to the center and attend to the chosen stimulus (when more than one target is presented). The strategy taken by the subject might affect the overall results.
* The recordings must take place in an environment that is distraction free; avoid talking to the subject during the recording sessions.

1. The events saved with the data should include:

* Type of paradigm: diagnostic, M-sequence, SSVEP, SSSEP, ErrPs, etc.
* Controlled environment: laser bot, speller, TV remote control, etc.
* Type of block: training, testing
* Start of trial
* Target selected
* Time of cue target presentation
* Time of stimulus initial presentation
* Time of the end of stimulus presentation
* Decoded target
* Time of decoded target or feedback presentation (if any info is presented)
* Time of end of trial

It is also recommended to include:

* Total number of targets
* Spatial location in the screen of each target

8 channels. Diagnostic uses O1 O2 Oz. Four choice using Oz only. Oz is in the ch3 MobilLab, order is Po7, …, Pz, Cz, Fz. Look at the flashes!

Discrete diagnostics, look at stimulus, blink rest period, not move, fixation where stimulus is.

Four-choice fixate to the target (up, down, left, right)

**Unlock Framework Broad View**

* What labs are participating in developing the Unlock framework?
* What apps are currently in the TO DO list?
* What paradigms are required (based on the input from all the labs)?
* What is the structure of these paradigms?
* Trials-start/Fixation/Cure-presentation/Delay/Target-Selection/Inte-Stimulus-Time/Nex-Trial
* Explain in detail the paradigm (1 session). Need what you required:
* Total number of blocks
* Duration of inter-stimulus time

Allow separated blocks and for each blocks determine the following

Each block keeps the same values

Times when events happen.

Type of events

Type of hardware

* Total number of trials per block
* Number of trials per
* Duration of inter-stimulus time
* Trial number
* Type of trial (dummy, baseline, training, testing, other?)
* Time of trial start
* Number of selected target
* Time of fixation point presentation
* Duration of fixation point presentation
* Time of cue presentation
* Type of cue presented (visual, auditory, somatic, etc)
* What inputs and outputs are required for each paradigm?
* Analog
* Digital outputs
* Send packets via TCP/IP internet
* What is the front end control?
* Sound
* Image on display
* Image on another computer
* Move Roomba
* Laser-bot (TV remote control).
* What data is recorded?
* Keyboard
* Mouse
* EEG
* EMG
* Blinks
* Electrodermal activity (EDA)
* Pupilometry
* Push buttons

Needs to configure each channels source:

Get a map of EEG and select the channels. They will be labeled and saved in configuration file.

Output selects the ports to be used.