DATA COLLECTION MANUAL for BioSEMI

By Joseph Brooks and Alexandra List
University of California, Berkeley

Modified February 13, 2006

USER RECOMMENDATIONS

Sign up online for the tolman5103 bic list at: http://bic.berkeley.edu/mailman/listinfo/tolman5103 and send out an email introducing yourself as a new user.

To troubleshoot, check archives: http://bic.berkeley.edu/pipermail/tolman5103/

Post any problems to other users by emailing: tolman5103@bic.berkeley.edu

When supplies are running low, replace them ASAP. There should always be enough supplies on hand for (at least) the next user to run their session.

If there's a problem, you are responsible for finding a solution and fixing it (if you don't know how to solve the problem, check the archives and then contact the list to see if someone does know how *you* can fix it).

Before using the booth on your own, please shadow a regular user through a WHOLE session (including set up and clean up). Consult the online scheduler to see who is running sessions regularly, and contact them ahead of time to see if they are amenable to having an extra body around.

When you have been trained, sign up for time online: bic.berkeley.edu/scheduler including time after your participant for you to leave the common testing area as you found it (or better).

PRE-SESSION SCREENING AND PREPARATION

Pre-Session Screening—what to look for

1. If corrected vision, ask subject to bring glasses instead of contacts if possible. Contacts are undesirable because of increased blinking. However, the effect may be minimal.
2. Participants who can sit ALERT for duration of experiment.
3. Screen participants for history of epilepsy, stroke, and any meds that may affect what you are studying unless these things are desired.
4. People without hair ornamentation. Although this sounds far-fetched, some people have very intricate beads, ribbon/string and other ornamentation that can prevent the EEG cap from sitting flat on their head (much less allowing gel to form a contact with their scalp).

Preparation—what participants should do that morning

1. Hair: shampoo, comb/brush scalp for 1-2 minutes, no hair care products (e.g., conditioner, gels, hair spray).
   - *You want a clean non-greasy scalp to work with. You can make judgment call about whether to wash hair beforehand if they do use hair products or didn't wash hair. In most cases, it is probably not necessary.*
2. Arousal: be well-rested and ready to sit still for experiment duration.
3. Clothing: wear comfortable clothing in layers with opening fronts, not sensitive to Velcro (for chest strap).
   - *Booths can be too warm or cool, clothing should be removable without having to go over the head.*
4. Use restroom immediately before session.

Experimenter Preparations

To be done the day of session. These preparations will change depending on the EEG booth being used.

1. Make sure the booth is clean and orderly.
2. Unplug the power source for any powered unused response devices.
3. Swap in whichever battery has been charging A/D box.
4. Make sure there are adequate supplies for participant preparation (trashcan, gel, syringe, needle, alcohol pads, shampoo, towel, paper towels, sponges, chest strap and connectors, dry cap, free electrodes, cap electrodes, tape and/or stickers, combs, measuring tape).
5. Turn on camera to watch participants. Press the video 1 button to stop the automatic scroll. Verify that volume for microphone is ok. This is especially recommended for patients just to be safe. You must turn it on before starting to record because switching it on may cause an artifact in the EEG.

EXPERIMENT PREPARATION

Here we prepare the equipment for the experiment. This should all be done before the participant arrives and takes 10-15 minutes (once you know how to do it). We must setup the EEG equipment and software (ActiView[*]*) as well as the computer that will present the stimuli. The specific cables mentioned might vary depending on the booth you are using.*

THE BIOSEMI SYSTEM

- The BioSemi system has several components:
  - A/D box – receives signals directly from the electrodes and performs analog-to-digital conversion. This box generally sits inside the booth next to the subject.
  - Active Electrodes
    - Pin-Type – These electrodes plug into the cap to serve as scalp electrodes. Some are individual (EXG) and some are in ribbon cables. The ribbon cables should

[*] ActiView starts as EEG-338.vi in some profiles.

generally be used to plug into the cap. If an individual electrode on the ribbon cable fails, then an EXG pin-type electrode can be used to record that the location of the failed electrode. The electrodes contain an Ag/AgCl pellet that serves as the recording surface.
        - Flat Type – These electrodes are used for recording on flat surfaces without a cap, e.g. EOG electrodes on the face, EMG electrodes at other points on the body. Reference electrodes at various body locations. These electrodes contain the same materials as the pin-type but are shaped differently.
        - Electrode Life: Active electrodes have a limited life for low-noise recording. When new, the electrode pellet is a brownish color. Over time (1 – 1.5 years of use) the Chloride is absorbed out of the pellet into the gel and the recording surface will become a pure silver color. At this point, it is time to replace the electrode set. Pure silver electrodes make noisier recordings.
    - Receiver Box – This box receives data from the A/D box via fiber optic cable. The box then relays the data to the data acquisition computer via USB cable. This box also receives stimulus codes from the Stimulus Presentation computer via a parallel cable. It adds these codes to the EEG data stream and sends them to the acquisition computer to be recorded. The receiver box may be a USB version that sits outside of the recording computer or a PCI card version that is inserted into the computer. Tolman 5103 has the PCI version.
    - Batteries – The system is operated by batteries. These batteries attach to the bottom of the A/D box in a fairly self-explanatory way. A low-battery indicator light on the A/D box will let you know when the battery needs to be recharged. The charger is usually located nearby in the lab. Please recharge a low battery once you switch it out. Please unplug the battery once it's charged—they should not be over charged.
    - OPTIONAL Analog Input Box (AIB) – This box is optional and is only necessary if you plan to record other analog signals along with your EEG data. One common example is recording from a photodiode placed on the stimulus presentation screen to allow precise and calibrated recording of the onset of the stimulus. This is for advanced users and beyond the scope of this manual. Ask an experienced user (e.g. Joe Brooks or Erik Edwards) for assistance.

- Each of these parts must be working and connected in order to run the system. Generally, everything will be connected when you arrive. However, occasionally people with different experiment parameters will

change the setup of the experiment. Familiarize yourself with the components and the way they are connected. If you know how it works, you will be better able to troubleshoot when problems arise.

TURNING THINGS ON

- Turn data acquisition computer on, log on as appropriate person and open ActiView from desktop (create your own login). ActiView is named EEG-338.vi in some profiles.

- Within ActiView, load your configuration file by going to the About ActiView tab, click “Load Config File” and select the appropriate file (e.g. defaultConfig.cfg).

    - *This configuration file sets things such as the montage, sampling rate, display reference, etc. Thus it is important that you select a file with settings that you want. Save your own settings file rather than using someone else’s file.* ***DO NOT change settings in someone else’s settings file.***

- Verify that on the Monopolar Display tab, on the left side, the correct channels are displayed as specified in configuration file.

    - *For the Brooks configuration file you should see the following: (A+B and EXG1-8) are highlighted, that the reference is to EXG4, and trigger format is decimal. On the right side, the decimal ratio should read 1/8 and save subset is marked “with 8EXG”.*

- Turn the BioSemi system on. Press the POWER button on the A/D box to turn it on. The electrodes do not need to be connected at this point.

- Click *Start* in the upper left-hand corner to verify that everything is working. If it is, you should see flat lines across the screen for all of your channels. If not, check the connections between the computer and the A/D box and try again. At this point, the CMS-out-of-range light (blue light) on the A/D box will be blinking. This is okay at this point because nothing is connected. If the low-battery light is on, then this is a good opportunity to swap out the battery.

- Finally, click “Start file” in the lower right corner to start a file for recording. This action will not start saving the data. You will start to do that later once you are ready to begin the experiment.

STIMULUS DISPLAY SETUP

Here we need to setup our stimulus presentation software and test to make sure it is communicating properly with the EEG software (ActiView).

- Display computer – Turn on the computer and setup the display to your liking. Your program should be setup to send codes through the parallel port. Codes generally range from 1 – 255. Important Note: BioSemi reserves codes 254 and 255 for a special purpose. 254 tells the data acquisition computer to start saving EEG data to disk and 255 tells the computer to stop recording. Thus, you should not use these codes for stimulus codes unless you know how to disable these defaults in the settings file. You do not have to use these codes to stop and start saving data. They are just a convenience for those who want to automate these steps.
- Run a test of your experiment and verify that the stimuli are appearing correctly on the booth monitor. Also verify that ActiView is getting the codes from the display computer. (NOTE: the ActiView system must be connected to and have the A/D box turned on and you must have clicked “start”.) The codes will appear along the bottom of the screen in ActiView. You MUST get this to work. Otherwise you will not be able to analyze your data. Check that responses likewise produce codes in the ActiView window if you want to have the responses recorded as well. If the codes do not look like numbers then you may not be viewing the codes in the correct format. Change the stimulus code format using the pull-down menu at the left side of the window. If the codes are not appearing, you will first want to check that the codes switch boxes are set to the appropriate settings and that all of the cables are connected appropriately.
- Finally, just set up your experiment to be ready for the participant. Change the logfile name to something appropriate.

PARTICIPANT PREPARATION

Next, we need to prepare our participant for the experiment. The first step here should be to obtain informed consent. Use the appropriate consent form. Collect any relevant data on the data sheet for that participant (i.e. color plates, handedness inventory, neurological history, relevant meds). I recommend taking some basic head measurements. If you ever need to reconstruct approximate electrode locations later, you can infer them using a few measurements…nasion-inion, inter-tragus distance, and the circumference. Then, briefly explain what will happen before starting. This is a good time to ask the participant if he/she needs to use the restroom.

Getting your materials ready…

The reference and EOG setup can vary depending on the experimenter. This is a commonly used setup.

Four EXG electrodes to attach to the face: one vertical electro-oculo-gram (EOG), two horizontal EOG, and a nose reference. You may also want to use 2 additional EXG electrodes for the mastoids.

- 3 spongy pads for covering the 3 front electrodes of cap (Fp1, Fpz, and Fp2). This makes things more comfortable for the participant. Slip them over the electrode wells under the cap, taking care not to get adhesive

on the plastic wells. (If there is a build up of adhesive, feel free to rub it off.)

- 4 (or 6, depending on how many EXG electrodes you use) washers/sticky circles and/or tape to attach face electrodes to skin.

- One or two syringes full of green (SignaGel) gel (depending on number of people helping with prep…two people for prepping significantly decreases the amount of time necessary). Minimize the amount of gel you use, generally a syringe-full (whether divided into two syringes or not) will be adequate for a full 64 channel cap, 2 CMS/DRL and 6 EXGs.

- Make sure that all of the electrodes are clean and dry before use.

Prep

Chest strap

Ask the participant to wrap the chest strap underneath their armpits, and explain that the cap straps will be snapped on to it for stability. Because this can become a bit personal it is best to ask the subject if they prefer to do it themselves rather than touch them without asking. The snaps should be arranged in the center of the subject's chest. If you or the subject prefers, the chin strap can be substituted for the chest strap.

Cap

- OPTIONAL: Exfoliate nose, cheeks, forehead, behind ears over the mastoids and temples w/ sandy Dermaprep gel. Dab the exfoliating gel on with cotton, rub it over their skin, and wipe off excess with new wet cotton. This may help you to get better signal by removing oil, impurities and dead skin cells, but this step is not clearly necessary with Biosemi.

- Clean areas just abraded with alcohol pads.

- Measure participant's head around widest part (usually through the inion). Choose cap of appropriate size for participant (size on inside tag). Use the larger cap only if the participant's head is at least 1 cm too large for the smaller cap, or if the smaller cap is unavailable for some reason (e.g., too wet). If the cap does not fit well and the electrode holders are loose against the head, use the tube gauze to fit the electrodes closely to the head. A good fit is important so that the electrodes do not move around and gel does not leak out from under the electrode holders.

- Put spongy pads on front 3 electrodes. The sticky part of the sponge should face be applied to the participant's forehead. This avoids build-up of sticky gunk (technical term) on the inside of the cap. An alternative to putting the adhesive on the forehead is to expose only about 1/5 of the adhesive surface and adhere this to the cap. This will reduce the build-up of gunk. It also makes it a bit easier to put the cap on because the sponges will be stuck to the gap and be less likely to fall off.

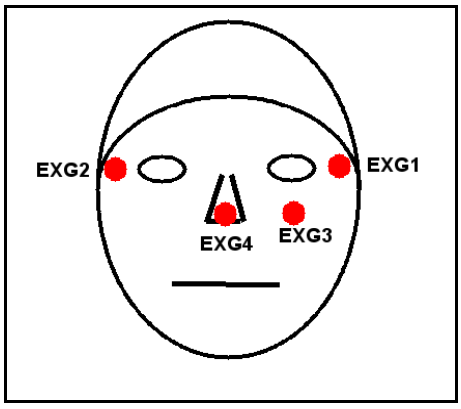
- Ask participant to hold cap at front of head and pull back over the head.
    - Align Cz mid-saggital, mid-coronal (just in front of ears). Make sure that cap is not tilted. Attach or have participant attach cap to chest strap (or chin strap).
    - Check that Iz is at the inion.
    - According to the 10-20 system, Fpz should be located 10% of the distance between the nasion and inion.
    - Snap the cap straps into the chest strap by crossing them and adjust as needed. Check that cap fits well and is not loose. Electrode holders should be flat on the head.
    - If the smaller cap is too big for the participant's head and there is too much slack, use the elastic netting in the prep room. Cut a piece of netting (Tube Gauze) and put it over the cap before you put the electrodes in their holders. This should help to keep the cap and electrodes in one place.
    - Make any measurements required by your experiment. For instance, any experiments involving deblurring at analysis may require a good estimate of electrode location. Note measurements on subject info sheet. For a more precise determination of electrode location, you may want to use electrode localization devices (like Fastrak 3D Digitizer) before inserting the electrodes.

- Fill each electrode holder in cap with some gel. IMPORTANT! Do NOT use too much gel. If the gel leaks out and starts running down the scalp you could (undesirably) connect electrodes. This is not good for your data. Luckily, SignaGel is pretty thick and generally will not run this way. As a rule of thumb, each electrode holder should be about ¾ to totally full. If the gel is above the rim of the electrode holder, you have used too much. The gel should NOT come squirting out when you put the electrode in the holder. Wipe any excess gel away. If you use too little gel, you may need to go back and apply more before recording. Too little gel may cause flickering offsets, out-of-range offsets, or high-frequency noise.

- Snap the cap electrodes into the appropriate slots as indicated by color and names. If the electrode does not snap in, then you may not have enough gel. This is a feedback mechanism to tell you whether the electrode is seated properly.

- Place the four (or six) free electrodes on the face

    - Put electrode washer (two-sided sticky circle) on each electrode. Place a bit of gel in the recessed area of the electrode. Apply the electrode washer before the gel because otherwise gel may interfere with the adhesion of the electrode washer to the electrode. Place on face in the following pattern: EXG1: left horizontal EOG, EXG2: right horizontal EOG, EXG3: left vertical EOG, EXG4: tip of nose electrode. The locations on the face are shown in the figure below. Make sure that wires are well organized (i.e., angled downward and backward) and that neither wires or the blue tab of the electrode washers block vision. You may want to use a big sticker or tape to make sure that none fall off. It is very important that these electrodes, especially the reference, are stable.



    - Depending on your reference scheme you may need to use additional electrodes in other locations in place of the nose electrode.

Booth & Electrode Offsets

Impedance

Impedance check is a standard part of most EEG recording at this point in the preparation procedure. It is a measure of how much impediment there is to current flow between two points for alternating current. Impedance results from a combination of the effects of resistance, inductance, and capacitance. The biosemi system does not give a measure of impedance.

Should you wish to have a measure of the impedance across the tissue electrode interface, you will have to use a separate impedance meter to make this measurement.

Understanding Electrode Offsets

Electrode offsets do NOT reflect impedance. Electrode offset is a running average of voltage at each electrode. The running average masks activity in the EEG frequency range (relatively high frequency) and thus emphasizes lower frequency drifts in the signal relative to the common mode voltage of the system. Electrodes with maximal offsets are often not plugged in, do not have enough gel or are dead.

The CMS and DRL electrodes determine the common mode voltage of the system. The common mode is the average potential of the subject as driven by the BioSemi system. It is nearly equivalent to the system's baseline. Each electrode is plotted relative to common mode. For instance when you look at your EEG in the post-acquisition viewing software (e.g. Analyzer, EEGlab), the voltage at a particular channel and time may be 12045 μV. This means that relative to the common mode voltage, the voltage at that channel was 12045 μV. The electrode offset of that electrode may be approximately 12000 μV or 12 on the offset plot in ActiView because the running average will tend to eliminate the high frequency and relatively small amplitude EEG signals. The electrode offset basically gives you a measure of how far off the common mode, on average, a particular channel is. The BioSemi system can record over a large range of offsets…about 256 millivolts in each direction from the common mode. Thus, only when your electrode is near the limit should you worry about the size of the electrode offset. If you are recording signals of about 50 μV but you are 400 μV from the limit, then you are most likely fine for recording unless you expect a 400 μV slow drift over the course of the experiment.

The upshot of all of this is that there is little need to adjust electrode offsets to be within a particular range unless the offset is near the limit of the system. However, there are other reasons (e.g. fluctuating offsets) to look at electrode offsets. These will be discussed below.

Starting the Recording Session

- Walk the participant over to the booth and have them sit down.

- Once they are comfortably seated, plug the connectors into the A/D box. Connectors are color-coded and labeled. EXG electrodes are labeled. Start with the CMS/DRL or A cable containing CMS/DRL to

verify that the blue light becomes steady. If it does not, you must correct this problem before proceeding with any other electrodes.

- Turn on power for A/D box if not already on.

- Ask the subject to remain quiet and still while you adjust the equipment.

- Go to the Electrode Offset tab in ActiView and look at the red bars. Each red bar corresponds to an electrode. If you haven't already, read the section above about electrode offsets. If any electrodes are out of range, you should try several things to get them in range.

    - Make sure the electrode has gel or enough gel.
    - Make sure the electrode is completely in the electrode holder.
    - Make sure the electrode is flat and tight on the head (try lightly pressing the electrode onto the head).
    - Make sure that there are no pieces of the cap or the cap tag underneath the electrode.
    - Try abrading the scalp under the electrode with a syringe or wooden stick.

- If any electrodes offsets are fluctuating, these electrodes need to be addressed. This means that there are very large amplitude changes in the signal. Such large changes are unlikely to be biological so there must be some other reason and you will want to remove it. This can happen with electrodes in loosely fitting sections of the cap. Try abrading lightly, make sure gel is getting through hair to scalp, adding gel, tightening the cap, etc. Obviously, there is a trade off here. You can spend a significant amount of time trying to make all electrodes behave well. However, this can be unfeasible. The best strategy is to focus first on electrodes most relevant for your effect. Fix as many as you reasonably can in the time that you have. If you can't do anything with a particular channel, you may need to remove the channel during data processing. Also, if you can't correct a channel, you may want to remove it from the screen so that it doesn't obscure the rest of the EEG. You can do this using the box in the lower-left corner of the data display (use shift to retain all selected channels & click the channel to omit). The channel will still be recorded.

- If there is overall craziness of the EEG, you may consider adjusting the reference channel because problems in this channel would affect all channels simultaneously. A quick way to test this is to reference to a different channel using the referencing panel at the left of the display. If the problem goes away, then it was most likely a reference problem. Adjust the reference electrode and try again.

- Check EEG signals for any unruly channels and correct as necessary until the raw EEG looks uniform. High frequency noise may mean that the gel is not making contact with the scalp. Use blunt needle to push hair aside or check to make sure that there is not any other obstacle between electrode and scalp. Ask the participant to just sit and relax, then to blink, and finally to move their eyes side to side to verify that all is working well—look at HEOGs (opposite-going during lateral eye movements) and reference electrode (should be flat) in particular. This is an important step because it is easy to plug the EXG electrodes into the wrong ports.

- High frequency noise at frontal sites can be associated with forehead muscle contractions. Make sure the subject has relaxed their facial muscles.

- Test the monitor and microphone with the participant in the booth before starting.

EXPERIMENT

Participant Instructions

1. Participant should try to be relaxed.
2. No chewing of gum or other things.
3. Cell phones should be left outside the booth or completely switched off (not vibrating) if kept in the booth.
4. Minimize movement, including movement of eyes and bumping head on chair. Emphasize the importance of not moving the face or neck muscles during trials. Movement during breaks is okay.
5. Give basic task instructions. Make a note of any special circumstances of a participant on their data sheet (e.g., response mappings, color blindness, bad channels).
6. After collecting first block of data, give subject feedback on whether they are moving too much or if there are too many blinks whether they can try to reduce the blinks. Obviously they should focus more on the task than reducing blinks, so emphasize that too. Design your experiment to include automatic short breaks (10 seconds) every 2 minutes or so. This will make it easier for the subject to avoid blinking during actual trials.

Recording the data

1. If not started already, show raw EEG by clicking on Start button at upper left.
2. Click lower right button (Save File) to start recording the EEG. Make sure that the "with EXG 1-8" box is “ticked” green. It will ask you for a

filename, and any additional information. Name it with participant initials or other coding system, date and block number, e.g. JB-12-26-03-BLOCK1. All blocks can be recorded in one file if you choose or separately. The file name will be shown in the right column.
3. Start recording by pressing Paused button (it should say “not saving” above it). The yellow “light” should blink when saving. You must do this because it stays paused otherwise. You may save every block as a separate file, or save every few blocks or just the whole session. Whatever you do, indicate the relevant file names on the data sheet.
4. Start behavioral task on other computer.
5. Open door and say hi to participant at each break. Ask them if they are ready to continue. Offer water if they are sleepy (showing alpha) and turn the fan or AC on if there are slow drifts in the signal over forehead/temple electrodes, especially.
6. During breaks, you can pause recording by clicking on the Pause button in the lower right. Just remember to start it back up. Alternatively this can be controlled by the 245/255 codes from your experiment.
7. If you are using the USB drives to transfer files to the Analyzer computer, remember to limit your file sizes to the size of the drive or less. The size of the file is shown in the lower right-hand corner. File size will also appear on the right column as you record.

CLEAN UP

Booth

- Power off the A/D box and unplug all wires from head box carefully.
- Clean up after participant leaves…i.e. take out any preparation trash, etc.
- Swap battery for recharging if necessary.

Participant

- Remove the electrodes from the cap CAREFULLY. NEVER pull the electrodes by their wire. Always grasp the body of the electrode and pull it out that way. Remove the cap from the participant and allow them to clean up their hair, etc. or offer to do it if they need help.
- Pay participant and debrief them.

Cap and Electrodes

General Note: When cleaning the BioSemi electrodes please be careful with them. Do not exert great pressure on the electrodes or put them in hot water. Also do not use abrasive soaps or cleaning tools. Also please keep the connectors dry. Separate cleaning procedures for the connectors can be found on the BIC Intranet Lab Notes.

- Fill a bowl (usually located near the sink in prep room) with warm water and some ivory soap. Place cap in water to soak.
- Let cap soak for about 15 minutes. Also put free and ribbon electrodes into water and soak. Keep connector ends out of water.
- Using wooden end of cotton swab or gum stimulator, clean each electrode holder of cap and free electrodes to make sure that all gel is gone. You can be most effective at cleaning if you clean from the inside of the cap while it is submerged in water. Alternatively, you can use strong water pressure from the sink sprayer to remove gel from each electrode holder. This second method works effectively but you still need to check each electrode visually to make sure that you cleaned it.
- Use soft scrub brush or water pressure to lightly remove gel from electrodes.
- Rinse and dry cap gently with paper towel.
- Spray cap with disinfectant (EcoTru) and let sit for 10 minutes.
- Rinse cap thoroughly.
- Hang up cap, ribbon and free electrodes to dry on rack. Make certain that the electrodes are hanging lower than the connectors are.

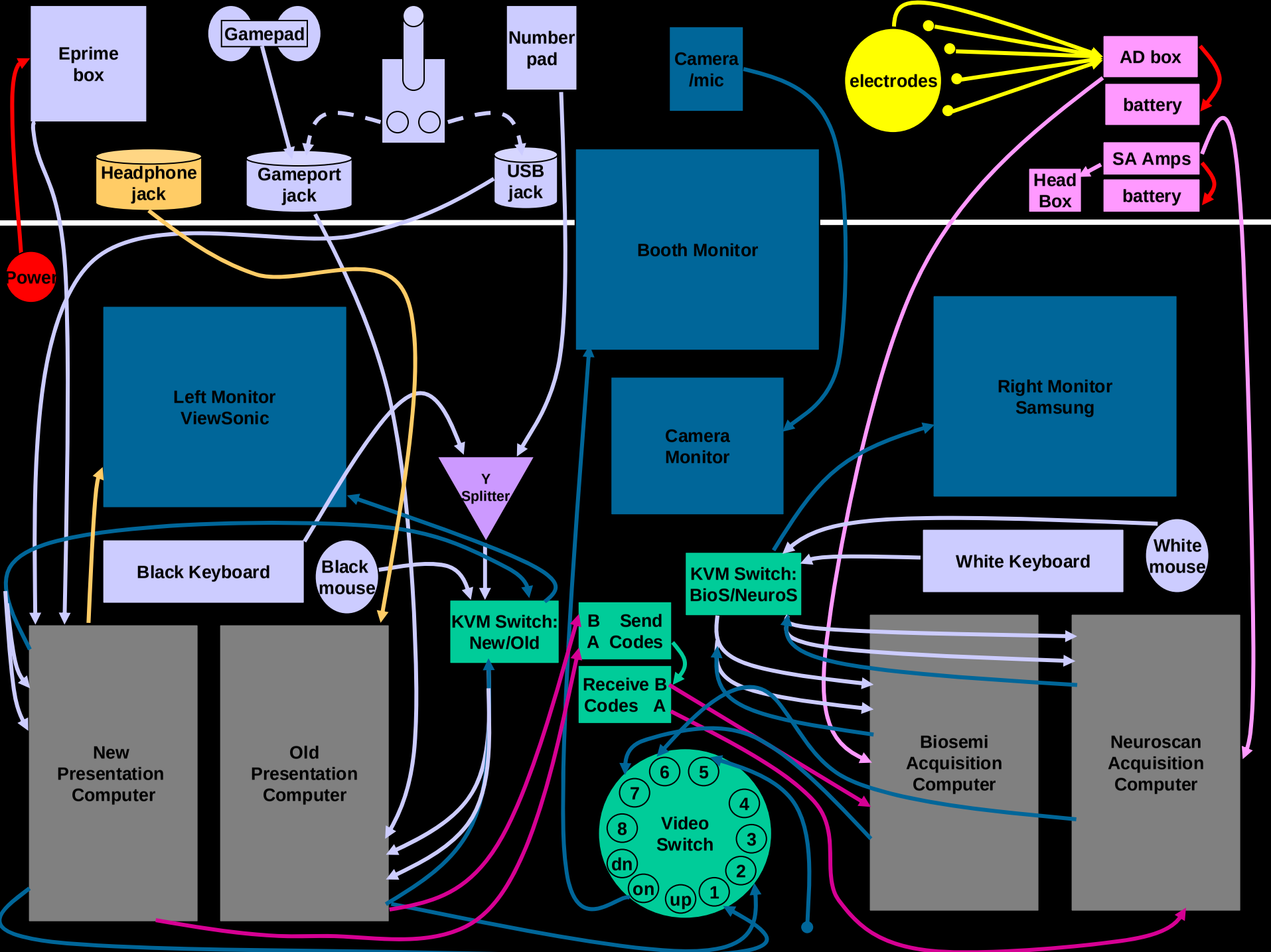
Miscellaneous

- Transfer data to appropriate location using either USB drive or the relevant FTP server.
- Refill the water jug for the portable sink either in the kitchen or bathroom (use hose atop cabinet). Empty out the dirty water jug.
- Place syringes and needles in respective appropriate receptacles (i.e., NOT in trash).
- Take out trash.

*** BE SURE TO CLEAN UP ALL OTHER MATERIALS. LEAVE THE PLACE AS GOOD AS OR BETTER THAN YOU FOUND IT. BE COURTEOUS TO YOUR FELLOW EXPERIMENTERS****

Portable Sink Directions

1. Water tanks
    a. Fill the fresh water.
        i. Use the flex tube hose attachment to facilitate process.
        ii. Use the wheeled CPU base to transport the tank.
        iii. Replace the tank with the opening away from you (this allows the tubing to reach the bottom of the tank and avoids air getting into the tubing), screw on top.
    b. Check that dirty water tank is empty.
2. Power
    a. Verify that extension cord is plugged into switch box.
    b. Verify that pump plug is plugged into switch box (for water pressure).
    c. Turn switch on, and wait until humming stops (~10 s). Water will be available immediately by turning on handles.
    d. For hot water (**you MUST do steps a-c first to run water through the water heater before turning it on**).
        i. Turn switch off
        ii. Plug in water heater
        iii. Turn switch on
        iv. Warm water will be ready in 5-10 minutes
        v. Hot water (110°) will be ready in 10-15 minutes
3. Sink
    a. To run water, turn handles—pump will turn on automatically.
    b. For sprayer use, turn handles on for faucet first.
    c. Drain runs slowly, so be patient and let water run out.
4. Clean Up
    a. Wipe sink down.
    b. Remove dirty water tank and discard (toilet or kitchen sink).
    c. Replace tank in cabinet with opening closest to you.
    d. Turn off switch.
5. Problems?
    a. Call Monsam (http://www.portablesinks.com/), Josef or Amy at (800) 513-8562 or (925) 330-0485
    b. Shampoo Sink with Faucet & Sprayer (SKU: PSE-2005F)


Eprime box
Gamepad
Number pad
Camera /mic
electrodes
AD box
battery
SA Amps
battery
Head Box
Headphone jack
Gameport jack
USB jack
Booth Monitor
Power
Left Monitor ViewSonic
Camera Monitor
Right Monitor Samsung
Y Splitter
Black Keyboard
Black mouse
KVM Switch: New/Old
B Send A Codes
Receive B Codes A
KVM Switch: BioS/NeuroS
White Keyboard
White mouse
New Presentation Computer
Old Presentation Computer
Video Switch
6
5
7
4
8
3
dn
2
on
up
1
Biosemi Acquisition Computer
Neuroscan Acquisition Computer