

Getting Started with EEG Study Schema (ESS)

Purpose:

Understand how to use the EEG Study Schema to organize, share, and publish data.

In this tutorial document you will learn how to:

1. Make an ESS folder structure
2. Create an XML ESS sheet
3. Create an XSL ESS sheet (optional, provided template should work in almost all cases)
4. Use an XML ESS and XSL ESS sheet to create an HTML

Software Needed/Recommended:

- Firefox or Internet Explorer
- EditiX (<http://www.editix.com/>)

Overview:

The EEG Study Schema (ESS) is a method of organizing data collected from EEG studies that allows users to easily share or publish the results of their studies with others. ESS is an XML-based schema which makes EEG study data usable for not only humans but also for computers, so this information can be read and processed in a fully automated manner.

The information placed in the ESS XML file can be formatted with the styles defined in the provided XSL template to become more readable for humans. This formatting occurs automatically when an ESS XML file is opened in a web browser (except for Google Chrome, for which local ESS XML files are not formatted properly).

The focus of this tutorial is to help you get situated and organized with ESS.

Lesson 1: Making an ESS folder structure

In this lesson you will learn how to create and rename folders that correspond to individual research studies. You will also learn how to sort existing files into these newly created folders.

1. To create a new folder for a new study, click on **File** then **Create New Folder**. Then name the new folder using the title of the study.
 - For example the folder may be named 'Classical Conditioning'. This folder will be the main folder that stores all the documents and files that are relevant to the Classical Conditioning study. Double-click the study folder, so that you can create new documents, or sub-folders within the main study folder.
2. Next, you will create two sub-folders in the main study folder. One folder will be titled 'publications' the other folder will be titled 'session'.
 - The publications folder holds any files or documents of resulting work produced from the results of the study, including papers, posters, etc.
 - The session folder contains numbered folders starting from '1'. Each number

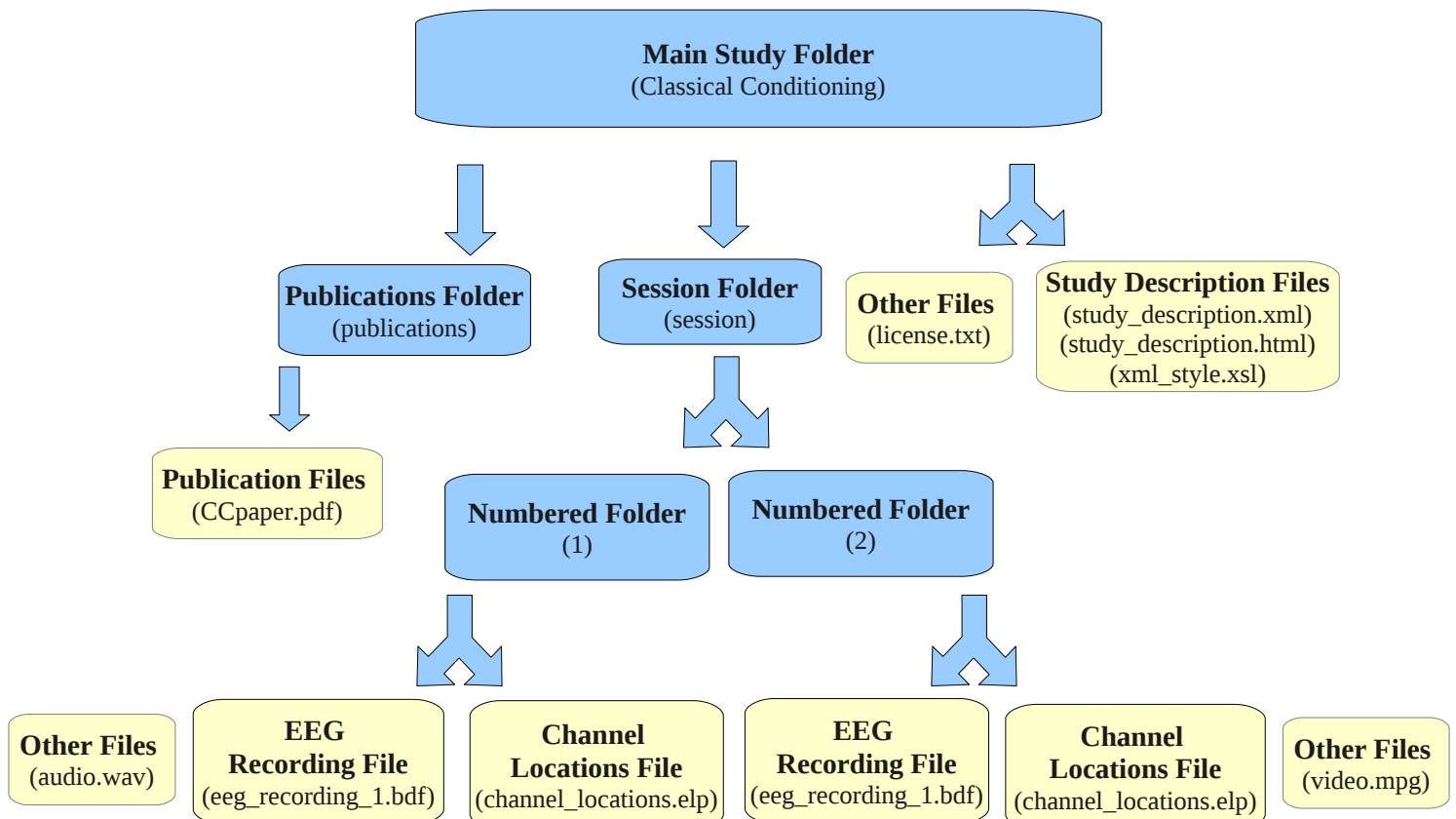
corresponds to an individual session of the study. You will create the same number of folders as there are sessions in the study.

For example if you collected data from 12 experiment sessions in your study, you will create 12 separate sub-folders in the session folder. The name of each of the folders will be a number from 1 to 12. The sub-folder named '1' will be the first session, '2' will be the second session, and so on.

3. After creating the numbered sub-folders within the session folder, you will move EEG recording file (s), channel location file (if available) and other recording sessions files (e.g. notes, experimental paradigm script for that session, audio...) into these folders. You will change the names of EEG recording channel location files as described below:

- The original EEG recording file that was recorded during the session such as a .bdf file (or two files with the same name and different extensions, as produced by some amplifiers) will be named 'eeg_recording_1'. As you may have multiple EEG recording files in one session, you can just change the last number (e.g. eeg_recording_2) to signify which EEG recording is the first, second, third, and so on.
- The EEG channel location file will be named 'channel_locations' and have the same extension as the original file. For example an .elp file will be named to channel_locations.elp. If you do not have digitized channel location information, you will specify your channel location system (e.g. 10-20) in 'Channel Location Type' field of the ESS XML document.

4. Below is the overall EEG Study Schema Folder Structure:



Lesson 2: Creating an XML EEG Study Schema Sheet

In this lesson, you will learn how to create an XML document using the EEG Study Schema.

1. To start, you may want to first download an XML editor such as EditiX (multi-platform and free) or Adobe Dreamweaver (proprietary). Some common text editing tools, such as gEdit provide basic XML support too. Once you have access to an XML editor, you can start by creating a new XML sheet. In EditiX click on **File, New**, and then select **Standard XML document**, and click **Ok**.
2. Next, copy and paste the entire ESS XML template into the blank XML document.
3. Edit the ESS template so that the information matches the specific study you are working with. (Note: Do not change the name of any nodes, they are meant to correspond to the XSL template) For more information regarding the XML ESS refer to the comments in the template.
4. Make sure to save the XML document as 'study_description.xml' in the study folder you created earlier.

Lesson 3: Creating an XSL EEG Study Schema Sheet

The provided XSL styling sheet template should be able to format any valid ESS XML document into a human-readable report (you should place it as 'xml_style.xsl' under the main study folder). The instructions below are for advanced users who may want to customize the colors, or other aspect of the appearance of the final report.

In this lesson you will learn how to create an XSL EEG Study Schema Sheet, that will allow you to style the XML document you have already created.

1. In EditiX, or another XML editor, you want to create a new XSL document. In EditiX you can start by clicking **File, New**, and then selecting **XSL Transformations 1.0 for HTML output** and click **Ok**.
2. Using the template that we have provided, you can copy and paste it into the document and make your changes. Otherwise, you can create your own XSL document to style your XML document.
3. Save the XSL document as 'xml_style.xsl' into the main study folder where your XML document is also saved.
4. After creating the XSL document you can now use Firefox or Internet Explorer to open and view your XML as you make changes to help you track your progress. (Note: Google Chrome does not work for this particular feature).

Lesson 4: Transforming your XML EEG Study Schema Sheet into an HTML file

This lesson will teach you the steps to create an HTML document that will display the information of your EEG study specified in the XML document you have created. Although this is often not necessary since most web browsers automatically use the XSL file when opening ESS XML and display it as an HTML, you may decide to include an HTML report in the main study folder for browsers that do not support this (e.g. local XSL in Google Chrome).

1. To transform your XML document into an HTML in EditiX , you must first have the XML document open in the program.
2. Click on the **XSLT/XQuery** menu, and choose **Transform using XSLT...** then select the proper parameters, where both your XML and XSL documents should be located in the same study folder. In the **Result document** field make sure that it is the same as the **XML document source**, with the only change being that it ends in .html instead of .xml .
3. After selecting the parameters, click **ok**. Then click **ok** again to the Information pop-up window and click **ok** to the Message pop-up window.
4. To view the HTML open up the HTML file in you web browser. It will work in both Firefox and Google Chrome.