

Google applications allow simultaneous editing by many individuals of a single text document (Google Doc), spreadsheet (Google Sheet), or presentation (Google Slides). This feature makes them useful for long distance collaborations both during and between meetings, whether your team is meeting in-person or virtually.

Google Drives

Google Drives provide shared cloud storage of Google app files as well as standard file types, such as pdfs, jpgs, MS Word, and MS Excel files. They are excellent platforms for collaboration, as long as users understand how they work. There are many other systems for file sharing (including Box, DropBox, SugarSync, ZoHo documents). NCEAS uses Google Drive because it is ubiquitous and inexpensive, but working groups should choose the system with which their members are most familiar.

Google drives come in two flavors, which have different strengths and weaknesses. Both require a google ([but not necessarily a gmail](#)) account.

Shared Google Drive

- Requires a Google Apps for Education or GA for Business account to create, but only a Google account to use and manage
- Can be accessed via the web or Google Drive File Stream, which creates a synchronized copy of files on the user's local drive.
- Is designed to be used by a consistent team of individuals, who have access to an entire drive, including subfolders.
- When in the drive, click on the small down arrow at the right of the drive title to view and change members, access sharing settings, and theme, or rename the drive.
- A sidebar on the right of the drive provides a log of recent activity (in activity tab) or (in the details tab) a description of file contents, the creator and the date created.
- Links to individual documents can be shared beyond the team for viewing or editing, but subfolders cannot.
- Files are "owned" by the drive and changes made by individuals update a single, master copy. This makes it easier for any team member to organize and clean up the drive, but it also makes it possible for them to delete content for all of the members.

Personal (or standard) Google Drive

- "My Drive" Is available to any Google account owner
- Offers more granular control over file ownership, organization, and sharing. File and folder owners can share main folders, subfolders, or individual files with read-only, or read-write permission.

- Each user establishes their own organizational structure. The same file can be in different folders for different users.
- When in the drive, click on the small down arrow at the right of the drive title to share, move, star, rename, or download the contents of the drive.
- A sidebar on the right of the drive provides a log of recent activity (in activity tab) or (in the details tab) a description of the drive or file contents, the date created, and the owner.
- Only a file owner can delete that file, which reduces inadvertent loss of information, but hampers folder clean-up and organization.

Organizational Conventions

Whichever file sharing option you use, groups should agree on a common set of organizational conventions. Key considerations include:

- As a group, commit to using the shared drive as consistently as possible. Rather than sending files by email, place new files in the drive and send a link (`File>Email collaborators` or simply copy & paste the link from the URL bar when you are in the file).
- Decide how you will organize folders and name files.
- Are you lumpers or splitters? Google drive has a good search function (gray bar at the top of the window), so it's possible to find well-named files even within a deep hierarchy, but filing may become onerous if there are too many levels.
- Do you need permission to share files outside the group?
- How will the original author be alerted to edits?

Working with Google Docs for long term collaboration

- It is possible to add MS Word and MS Excel files to the shared drive, but they do not work well for collaboration because the only way to make changes is to download, edit and reupload them. Best practice is to convert Word and Excel files to google docs or sheets on upload and then immediately delete the original Word or Excel file to avoid confusion about which version you are using.
- Google Docs/Sheets/Slides all have version controls up to 40 named versions for docs and slides and 15 for sheets. View earlier versions by selecting `File>version history>view version history`, and clicking on the timestamp or named version.
- It's wise to name major revisions of a document so you can return to a known version. Use `File>version history>name current version` to do so.

- Make navigation (and formatting) of long documents easy on yourself by using heading styles (Format>Paragraph Styles>Heading 1/2/3/4/5/6), which will automatically create a document outline in the left sidebar.
- The pencil icon on the top right menu allows users to switch between editing (default), suggesting (similar to track changes in MS Word), and reviewing (shows only accepted changes) modes.
- Tools>Review Suggested Edits allows an author to step through suggested edits one at a time and accept or reject them.
- Sharing: It is possible to give non-members permission to view individual documents. That decision should usually be made by the author or originator of the document.
 - To share, choose the blue <SHARE> button at the top right; click on WHO HAS ACCESS in the lower left corner of the dialog; Turn LINK SHARING ON; Choose the appropriate options and copy the link.)
- File naming:
 - Be kind to your future self. Name files so that you will recognize them a few years down the road.
 - Don't use spaces in filenames. Use hyphens or underscores instead. Avoid special characters.
 - When naming both folders and files, move from the general to the specific, so that similar groups of folders and files sort together.
 - Use YYYY-MM-DD format for dates so that they sort in order.
 - Use upper and lowercase letters consistently. A random mix of capitalized and uncapitalized file names is hard to scan quickly.

Google Docs for shared, collaborative note-taking

Google docs or other collaborative documents such as [HackMD](#) are exceptionally useful as a shared record of online meetings and a way to solicit asynchronous contributions.

- Provides a nonverbal way to contribute, ask questions, and reinforce ideas (+1, 100, ...) as well as a record/reference of discussions, resources, and links.
- When used in association with a Zoom meeting, share the link to the document often (in the invitation, the agenda, the meeting chat, again in the meeting chat after everyone has joined)
- To quickly file documents that are shared outside of a shared drive, click the icon at top left by the doc's title to organize 
- Use the Outline view on the left to navigate. (Choose View>Show document outline if not visible).
 - Shortcut to indent/unindent from within a line:

- Mac: ⌘ -] and ⌘ - [
 - PC: Control -] and Control - [
 - Add comments / emojis / gifs / +1s to say “me too.”
 - Shortcut to insert emoji:
 - Mac: Control - ⌘ - Space bar 🍷
 - PC: Windows - Period OR Windows - Semicolon ; 🦊