**BA 186 Final Paper
(Google Drive)**

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Google Drive is a free cloud-based storage service that allows individuals to upload, download, and share files with others anytime and anywhere. This can be done on any device as the service can be accessed via website or application on both mobile phones and personal computers, making it one of the most convenient tools known to both students and workers. Ever since its inception in 2012, Google Drive has quickly dominated the office suite technologies market with a 63% market share due to its unique and extremely convenient features.

Google Drive also encompasses a set of game-changing work programs called Google Docs, Google Sheets, and Google Slides, which can be likened to the functions of Microsoft Word, Excel, and PowerPoint, respectively. Aside from the file storage and synchronization service Drive offers, these three applications have revolutionized the work environment in both schools and offices as individuals are now able to work on documents, sheets, or presentations simultaneously -- increasing productivity and inspiring collaboration.

However, despite the massive impact Drive has brought to the work scene, there remains to be room for improvement, especially with the search feature of the program. Based on our personal experience and added online research, the search system offered in Google Drive is rather difficult to use due to misleading search results. Moreover, managing search results can be difficult since there is no feature that allows users to limit search results to a particular folder. In the same vein, many users experience difficulty in moving or adding files to an existing folder due to a lack of a search tool in the window that appears when trying to perform said functions. We believe the largest issue with Google Drive as of the moment, therefore, is the lack of a convenient search and navigation system within the program, making it tedious for several users

to find files and/or move them to certain folders, especially when one's drive contains a tremendous amount of files.

Given this dilemma, the team proposed the problem statement: **What kind of solution can we therefore propose to make such a process more efficient and user-friendly to Google Drive users?**

I. Planning

Determining Requirements Needed for the Project

Interviewing Individuals and Groups currently using Google Drive

To start the planning phase of the team's project, we prepared an interview guide to aid in developing, planning and conducting the interviews. This included contacting the interviewees to schedule the interview and giving them a background of what the interview will be about. The team also formulated guide questions and prepared the agenda for each interview. The interview revolved around the individual's personal experiences using Google Drive, both for personal use and work or business, difficulties or complaints using the application and possible points of improvement regarding the layout, navigation system and other significant features of the application.

For the group interviews, the team contacted a student organization based in the College of Business Administration in UP Diliman and asked the students how Google Drive helps the organization with their various projects, communication with its members and how the application can be further improved to address the organization's needs. The aim of this step was to identify issues to prioritize and create solutions to address these. By listening and hearing real-life experiences from users and different perspectives on the use of Google Drive, the team was able to understand and pinpoint specific aspects of the application that could be improved based on each user's activity and preferences.

Direct Observation of Google Drive Users

The team observed a group from the student organization in UP Diliman and their use of the software in planning one of the organization's events. This was done to identify which features were helpful to their work and which features could be improved to make the event planning seamless and hassle-free. Google Drive was used by the organization to track the group's progress and compile their resources or contacts (speakers, schools, etc.). The team was able to witness firsthand how the application was used in the different functions of the organization and identify points of improvement to make the process more efficient and effective.

Document Analysis

Additional research was done online to further analyze and read on the current system of Google Drive. The team read various reviews to identify problems with the existing system and understand how the application functions better. This step allowed the team to identify advantages or benefits of using Google Drive and see how the application actually works and the experience for users. By reading up on the system, the team was also able to understand the technology of Google Drive better to be able to come up with appropriate solutions for the issues raised.

From this, the team was able to identify Google Drive as an example of a disruptive technology as the application allows users to work on a particular document, sheet or deck simultaneously, which could play an interesting role in the traditional ways of working of corporations. The system allows for collaborative work processes and quicker deliverable accomplishment through the synchronized work practices encouraged by Google Drive. As Google Drive is already an existing cloud-based system, the main goal of the team is to improve the system, as what it needs is mostly process reengineering. Based on the observations, documents, and interviews, the team aims to identify problematic processes

and make it easier to come up with solutions. The team planned to improve on Google

Drive making it more efficient and user-friendly.

II.   **Analysis**

E-R Diagram (Google Drive)
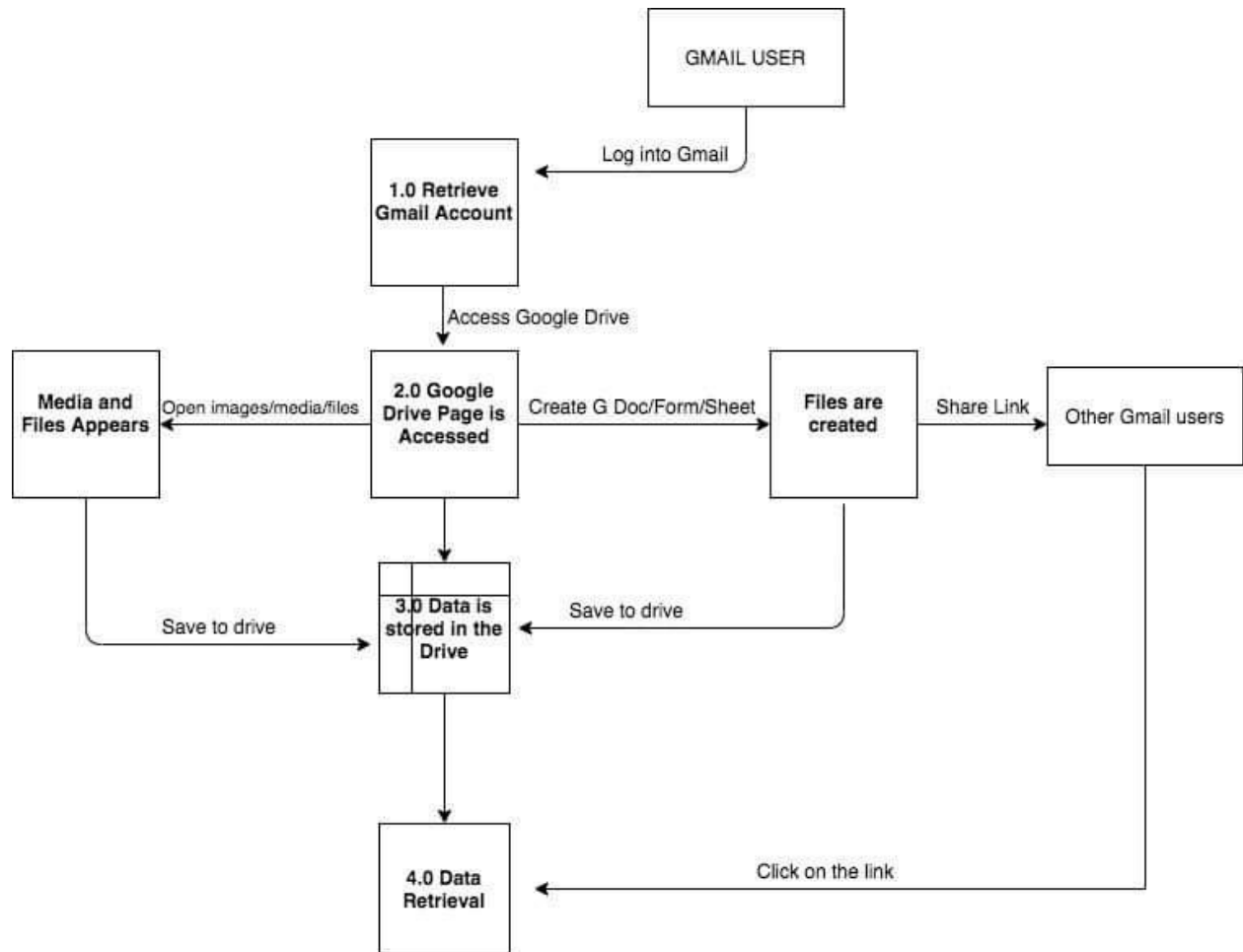
Database

Officer

Student ID	First Name	Last Name	Position
XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY

Event

Event Name	Speaker	School
XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY

Speaker

Credentials	First Name	Last Name
XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY

Students

Student ID	First Name	Last Name	Grade Level
XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY

School

Address	School Name	School Number
XXXXX YYYYY	XXXXX YYYYY	XXXXX YYYYY

Issues

When analyzing the database report, it seems as if there is nothing wrong, thus this section will not be touched on when discussing the issues. In the context of how the interviewee uses Google Drive, in terms of storing data, Google Drive is very helpful to

users as it allows them to keep track of attendees, officers, speakers, etc. This allows them to keep a database of their past officers as they can make evaluations and see if each officer was able to do their job, as well as if the speakers they contacted have potential in the future to be contacted for the same purposes. The true issue lies within the E-R Diagram. When analyzing the flow of data within Google Drive, the actual retrieval of data may be problematic. Anyone with a link of the drive may access it, and retrieve files as pleased. This also means that files are more prone to being rearranged and there is no guarantee that users will be able to search for what they are looking for amongst the countless files.

Big Idea

The big idea of the project is to make Google Drive more efficient, user-friendly, and convenient. As mentioned earlier, there is a problem with the search and navigation system in the program.

First, we tackle the search features of the program which are very limited. Users are unable to search for a specific folder when saving a file. They would need to scroll down to the list of folders until the desired one is found. Adding a search option when saving gives the users less hassle and allows them to save time when working.

Second is the navigation system. Currently, the navigation system requires users to manually open each folder in order to determine some important features such as the folder path, date created, and much more. Displaying these details would help the users especially when they want to organize their files

Lastly, there was also a problem with the program's limitations when it comes to the transferring of files. In order to do so, users need to download every file and reupload them to a new one. The difficulty increases exponentially when the user has a lot of files. Creating a feature for this leads back to one of our big ideas which is to allow the users to

work more efficiently when using this program. All these points to our goal which is to solidify the user's loyalty to the program by showing them the various features it offers.

Advantages and Benefits

The ideas proposed by the team, both big and small improvements can make a great impact on the experience of using Google Drive. The improved search tool will make it easier for users to search for the files they need and share them with other users. Each user has different needs and so, by being able to filter your searches and customize it per individual, the use of the application will be more effective and less problematic. This will create a more personal search for each user and will be able to give relevant suggestions to make it easier for users to access their files. When Google Drive users create files, having a "Recently Used" or Favorites option on the menu while saving their files will make it easier to organize the user's files and save it in the desired folder, as opposed to the current layout when saving files, especially if they have several folders on the Drive.

Another benefit that will come with the implementation of the team's ideas is a more efficient navigation through the application as Google Drive users will now have quicker access to files and will be able to navigate through the application better. Identification of files will be less of a hassle for users as there will be no need to individually open every single document to identify its location as hovering the mouse on the file will lead to its file path popping up, reducing search time making finding and identifying files much easier.

Google Drive will be made even more accessible as users will have the option to customize and cater the interface to their personal needs, using both the mobile application and access Google Drive on the Web. All these improvements will be especially helpful to users who make use of Google Drive's collaborative editing feature and store several files on their Drive as it allows for easier communication with other users,

a quicker search and more organized layout. The Google Drive experience will be made seamless and less complicated for all users in creating, accessing, and locating their files. Overall, the proposed ideas will help create an easier and more efficient Google Drive user experience.

Because Google Drive is an easily accessible, off the shelf type of software, menu users find much use out of it as it offers several work programs as mentioned like Google Docs, Google Sheets, Google Slides and even Google Forms for conducting surveys. Since it is a cloud-based computing system, it enables users from all over the world to collaborate and make changes to documents in real-time. Google Drive's minimal web design, use of colors and icons make the application easy for users to learn how to use it, remember what commands to input and make processes more efficient. With the use of a conceptual data flow model and a data flow diagram, users are made aware of the process of interacting with, transmitting and storing data on their Drives.

One major problem encountered with the use of Google Drive is file retrieval, although it is easy to navigate through the application, locating countless downloads of files, several of which being files merely shared by friends is difficult for users. Despite the application's accessibility and convenience and various programs for both solo and collaborative projects, searching and organizing files proved to be the most challenging part of the Google Drive experience. This is why the team proposed a redesign of Google Drive's interface -- possibly adding a pop-up menu to the mix and adding a "Recently Used/Added" or Favorites feature would make it convenient for users to go through their saved files. This would help users access their most recently opened files for manipulation and make it quick for them to locate their files, as with the Popular/Favorites suggestion, which will allow users to access their most frequently opened files. With better use of filters

by adding them above the search results, allowing users to search for their files based on the type of file or particular category, Google Drive users will have an easier time locating their files in the future and sharing them with other users.

Lastly, another way to redesign the interface would be for users to drag selected files into the "Quick Access" section, allowing them to take control and customize what files appear in this section so they may easily access it when needed, similar to a shortcut on a smartphone. By making use of the simple concept of web design and user-friendliness, Google Drive may be brought to even greater heights in terms of efficiency and overall usability.

III. Design

The team critiqued Google Drive's current design and identified both the good and bad points in the interface. This allowed the team to create a design that will maximize Google Drive's current features and further improve navigation on the application. This helped the team identify which features could be removed, adjusted or added to come up with a more efficient and user-friendly Google Drive.

Features

Presence of Icons: graphical representations of Google Drive's functions, easily understood by users

Color: serves as an accent to the display, helps users differentiate various items on the interface and makes the application more pleasing to look at

Highlight: notifies users of where they are on Google Drive and draws attention to keywords on the interface or warnings

Drop-down Menu: menu-positioning method that puts the access point of the menu near the top line of display, expands options when users click

Pop-up Menu: menu-positioning method that puts a menu near the position of the cursor, shows options to the users without them having to click

Mixed Upper and Lower Case: easier for users to read text

Easy Navigation System: users are aware of their current location on the Drive and clearly shows how to move forward and backward
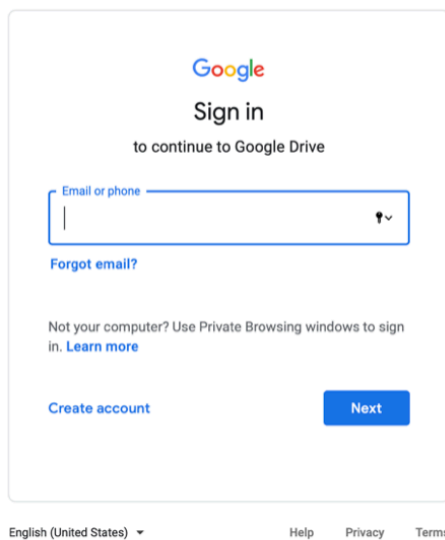
Cookie Crumbs: shows the user his or her history on Google Drive by placing tabs at the top of the dashboard, easier navigation to points the user has visited

Meaningful Titles: clear and specific titles

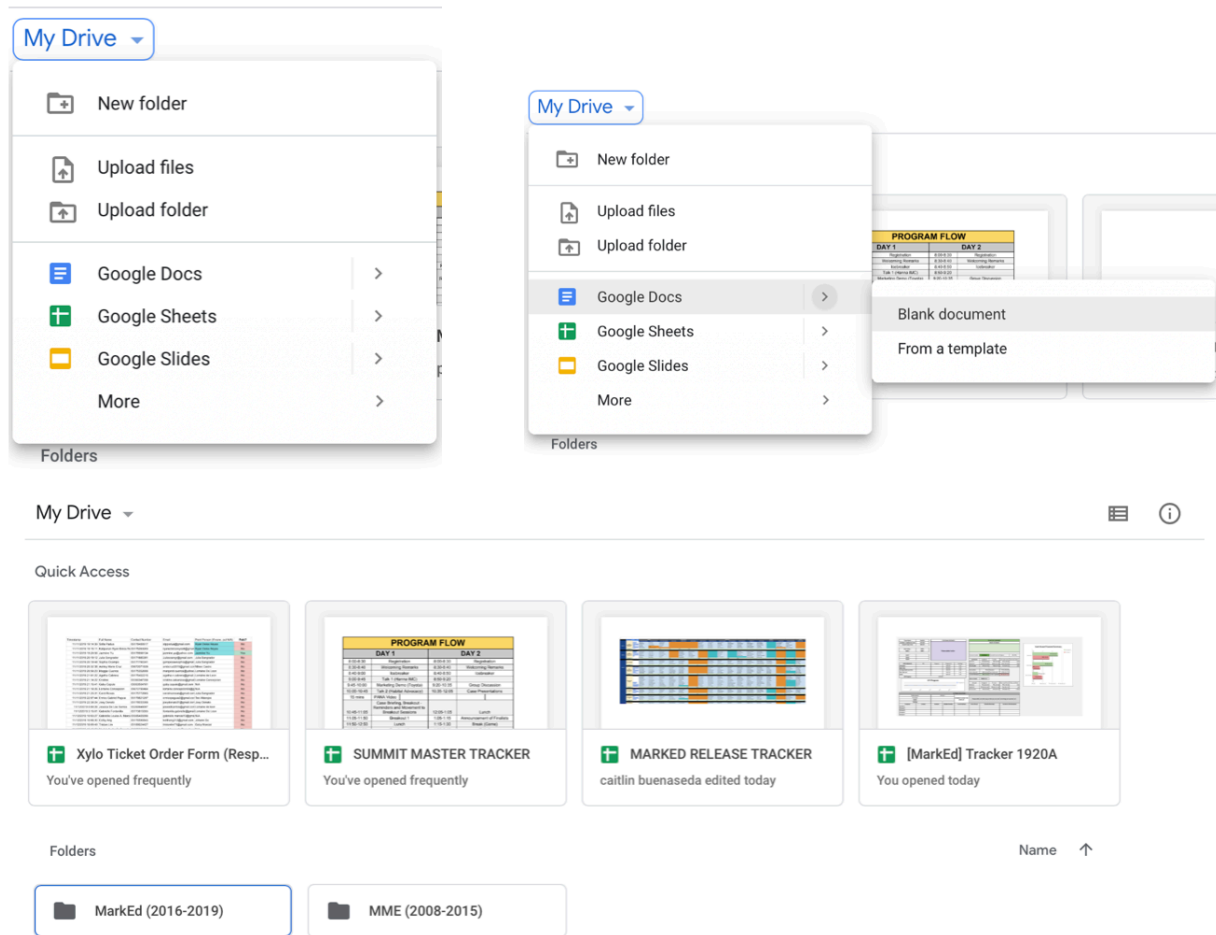**Spacing:** adequate spacing between labels

Balanced Layout: appropriate margins, spacing and labels

Form Interaction: human-computer interaction method where data fields are formatted similar to paper-based forms; users can fill in the blanks
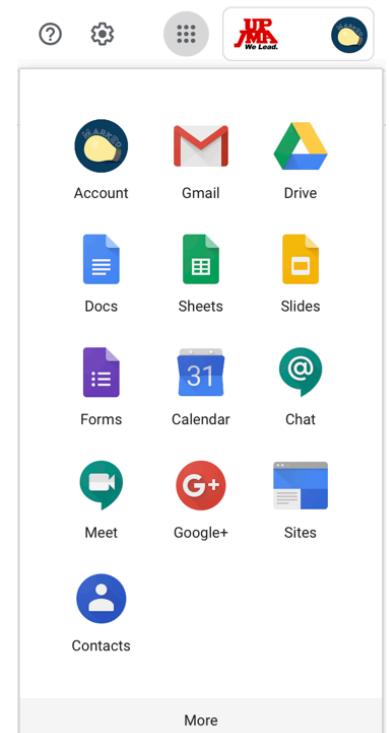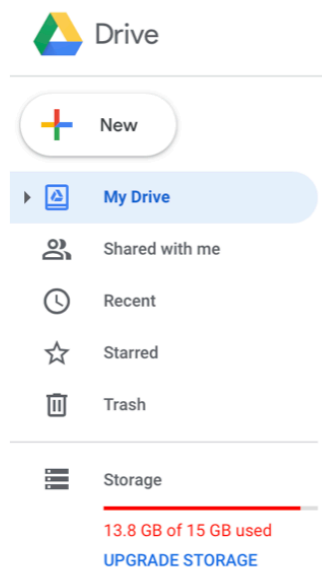
Proposed Design Solutions

- **Adjustable Dashboard**: One of the most user-friendly aspects of Google Drive is its dashboard. It is here that users are able to access files recently opened via the "Quick Access" portion and can go through other data either created or shared with them via the My Drive files. This can be very useful for finding files that are frequently opened, however, sometimes there is no clear explanation as to the content that comes up in the above portion. To solve this problem, the group thought that it would be a better alternative to give users the freedom to include what they wanted in the Quick Access portion, simply by dragging and dropping their desired files into the said portion (As seen in the first picture

below). Another improvement which may be done, would be to add filters based on the type of file when going through My Drive files, as this would make sorting through files much easier.
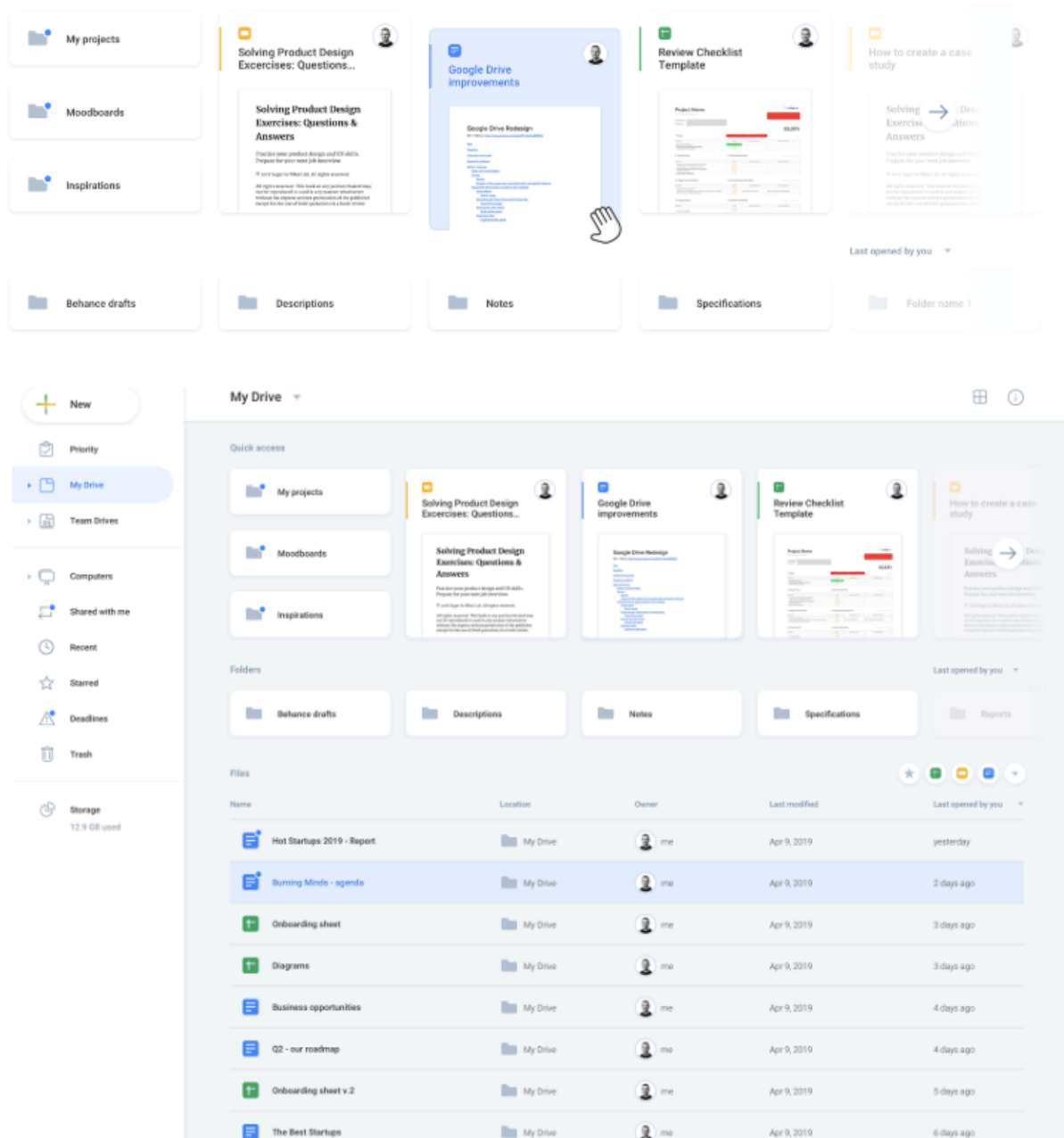
- **Search Tool filters**: People often struggle with file retrieval in Google Drive because of the fact that it is not easy to find files quickly and there are the filtering tools are not made easily accessible. Aside from this, the group members also noticed that there is no option to search for specific folders or even look for the root folder of whatever file it is that is trying to be accessed. Thus, similar to what was done for the My Drive files portion of the dashboard, for the interface redesign, the team decided to add filters directly above the search results to make things more fluid and user-friendly. The filters presented allows users to sort through files based on the folder, file type, owner, or any other category that the user desires to group their data into. The group hopes that this may solve the hassle of having to go through countless files, some of which are being files merely shared with users.
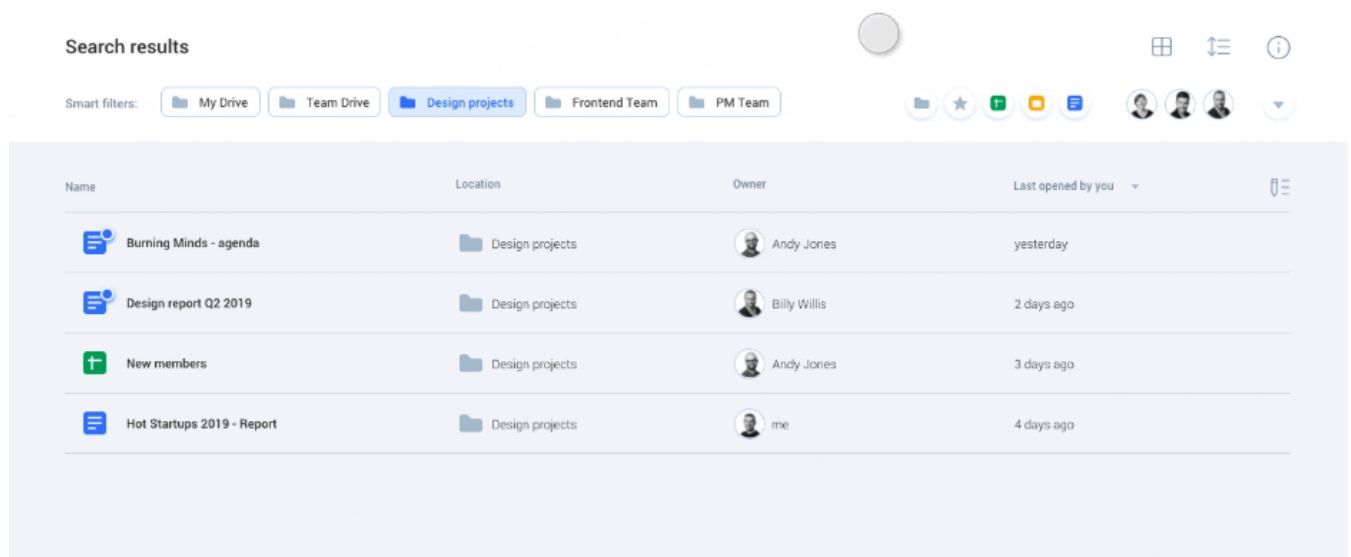
- **Advanced Search Options**: Finally, to truly make sorting through files and searching for data easier for any type of user, the group decided to add personalized features when

searching. People look for data differently, whether it be by making use of the search bar, searching for folders manually, or scrolling through everything in the My Drive files. People tend to search for things differently, and will thus also hold more significance over some details of a file such as when the file was last modified or when it was last opened. Given this, the group wanted to give users the option to click some columns on and off so that only the details important to the user will be seen and files may be easily accessed. (Imagine the image above, but rather than showing location, owner, and last opened by, only the location and owner will show up.)

Steps to Implement the Proposed Solutions

In order for our group to achieve our desired solution to Google Drive's inefficient processes, we have prepared a few steps to fix the current problems:

- First, the team will conduct a survey regarding Google Drive's current available features to help determine how much of its users experience the same problem and inefficiencies

- Once the team has collected enough data, the team will then consult with a system's analyst to see if our solution will be effective to the software and if Google would consider our suggested revisions.

- After the approval of the consulted IT specialist, the team will ask for their expertise in designing the new user interface of Google Drive, which includes our desired features and solutions.

- A prototype of the new and improved Google Drive will be made to test the effectivity of the project

- Once everything is ready, the team will approach Google and arrange a business proposal regarding the reengineering of its current processes for Google Drive.

- Everything will be laid out from problems, suggested solutions and other proposals from the IT specialists and once Google agrees, we are not only given the chance to solve the problems of the majority of Google Drive users but also have a project which we can profit from.

Conclusion

There is no doubt that Google Drive stands as one of the most important work tools in both classrooms and offices, especially considering the great convenience it offers as a synchronization and storage service, not to mention its office suite programs allowing for simultaneous digital collaboration. Yet, as with every other technological advancement today, there remains to be room for improvement, as prominent issues with the program were identified through desktop research, user observation, and consumer surveys and interviews. These allowed us to create and validate assumptions relating to our own experiences with the application's issues, which mostly pertained to its search features, navigation system, and file transfer mechanics. True enough, these problems were experienced by several other individuals who serve as some of the primary stakeholders of the program, and were therefore credible respondents to our study.

With this, we were able to systematically propose a number of solutions with the aid of our lessons throughout the semester, with the ultimate goal of proposing several means to further revolutionize Google Drive as a work and study tool. In the planning process, we learned to appropriately identify and engage with our project's stakeholders -- students and workers -- to tailor our proposal to their needs and, presumably, those of many other users. Moreover, the planning process was the primary means through which we could systematically determine the additional requirements needed for the program, and was essential to creating a proposal that addressed several need gaps in the market. We learned that the planning process, the importance

of which is often overlooked, is actually key to the success of any project proposal, as this is the stage in which the consumers of a product or service are met and understood in order to curate an appropriate and relevant proposal with the potential to one day change working habits as we know it.

Next, the analysis stage paves the way for discussing the identified issues with the guidance of an E-R diagram of the Google Drive process, making for a more structured and credible process. Following the identification of issues, moreover, a discussion on the possible ways to address each problem was held, with the aforementioned diagram serving as a means to optimize the process users take in their engagement with the program. The greatest value which our analysis added to the project was in the rough ideation of possible solutions to the identified problems, including the benefits that may arise from said solutions. Essentially, the analysis would later provide a guide for the design stage, which could not have been possible without the ideas borne from the analysis process. Needless to say, the E-R diagram was the most important lesson applied in this particular stage, given that it was the primary visual guide we needed to properly address the previously identified issues, while maintaining a clear vision on what exactly the process is supposed to achieve.

Lastly, the design process was the means by which we could finally bring our solutions from the analysis stage to life with the aid of our classroom lessons, as we devised means by which the identified issues could be addressed through the use of color, menus, and cookie crumbs to name a few. This was arguably the most difficult stage in the project, given that we had minimal knowledge and experience on information technology to recommend a functional solution to the identified problems. Nonetheless, our findings from the planning and analysis stages were extremely helpful in providing concrete solutions, namely, the adjustability of the dashboard, the availability of search tool filters, and the design of advanced search options. The value of this

stage can be found most in the concreteness of our recommendations, making them viable to at least consider on the part of the company to optimize the program. Furthermore, we find the design stage to be the most eye-opening, as we learned that the process could not have been possible without the stage preceding it -- the design stage could not have been done without an accurate analysis, while an accurate analysis could not have been done without thorough planning. Each stage is essential to creating a feasible proposal that could one day change lives in the workplace, and we are proud to say that with the guidance of our classroom lessons, we were able to do just that.