



# Google Cloud Storage Experience

## Usability Study Plan

HCDE 517 Usability Testing  
Team 5G's (4 Gals + Google):  
Victoria Briscoe, Vina Chan, Sooyoung Hwang, Shu-Fan Wen

## Goals

Google Cloud Storage is part of the Google Cloud services platform object storage service designed for high availability. There are generally two ways to access and manage data on Google Cloud Storage. Access can be done through a web application called Google Developer Console or by use of the command line tool called gsutil.

- Google Cloud provides a web user interface just like Gmail called Google Developer Console. It allows users to perform storage management tasks and access data through the browser. Cloud Console supports a subset of functionalities of gsutil. Many tasks that can be performed on gsutil can also be done through the Cloud Console.
- gsutil is a command line tool that is built using Python. It also allows a user to do a variety of data management tasks leveraging commands line statements like those under a Unix system. The gsutil tool allows users to perform basic as well as more advanced data management tasks whereas the Cloud Storage uses a fixed set of command libraries. The gsutil itself includes a basic help function and gives explanation on how each command works.

Our team will conduct a study on the basic workflows involved with the access, storage, and management of data of the two aspects. We believe design and functionality should meet user needs and focus on creating an excellent user experience. We want to answer the question, “How well does this product meet the usability experience or expectation of our users?”

## Objectives

- Identify challenges and positive user experiences in the Web console
- Identify challenges and positive user experiences in install/setup process in the gsutil tool
- Identify usability concerns and positive user experiences with online instructions and tutorials as used
- Obtain and collect qualitative data about users’ experiences with similar cloud products like Amazon S3, Windows Azure, and IBM Smarter Storage

### Special

- Baseline assessment: Plan to correlate user findings with Cloud storage comparative review from other cloud platforms (done outside of user tests)

Our team’s objective is to discover the user experience with the Google Cloud Storage. The assessment of the user experience objective is to uncover some of the pain points and capture positive experiences from the tasks evaluated. We will add the 5E’s of Use (explanation in Methods Section)..

Our team plans to interview each participant to collect qualitative data about their experience with similar services from Amazon S3, Windows Azure, and IBM Smarter Storage. Our findings on the Google Cloud Storage offerings will help capture the user’s experience on how they interact as well as why they use these products. The evaluation will give our client potential areas to focus on for addressing product gaps along with possible prioritization of new features.

# Research Questions

## gsutil

- How easy it is to walk through the setup instructions online to install gsutil?
- How easy it is start using gsutil tool?
- Does the gsutil tool online help and tutorial instructions provide clear and the information to get started on the tools?
- Are the tools user-friendly and intuitive for the users?
- How useful are the features on the basic usage of accessing and managing data?
- Can users navigate to the online help and tutorials easily?
- Are the tools intuitive to use?

## Console

- Are the tools user-friendly and intuitive for the users?
- How useful are the features on the basic usage of accessing and managing data?
- Can users navigate to the online help and tutorials easily?
- Are the tools intuitive to use?
- How easy was is to recover from errors?

## Overall Google Cloud Product

- Do the features on the tools help accomplish the task of access, manage, and store data on the storage?
- Are the tools user-friendly and intuitive for the users?
- Gather opinions on how Google Cloud Storage shines or areas that fails?
- What other features can be added to attract potential customers?
- How easy was is to recover from errors overall?
- How are these two tools in comparison with the other Cloud tools used?

# Participant profile

Based on our discussion with the client, Google main interest in discovering user feedback from two target groups with development experiences of experienced and novice. Additional interest in users with small business focus. The first test group will be the experienced subject matter experts. They will be used to leverage discovery on how the features and tasks are working and discover best in class type features. We also will test on a second group, novice users, with the goal to gain insights of those who are new to the product experience and represent those developers supporting small business and startup companies. We will also document if a user is from corporation, small business or student.

For our study, we will classify these two user groups as Experienced and label it as Category 1 Testers and Novice users Category 2 Testers.

## Participant Characteristics

Total number of participants:

We plan to recruit at minimum 8-10 users. Preferably 4 experienced users and 4 novice users.

**Group 1 Testers:** users who use or have used cloud storage services products, such as Google Cloud Storage, Amazon S3, Windows Azure, and IBM Smarter Storage.

**Group 2 Testers:** users with computer background, with minimal exposure to cloud services. This type of people have understanding of at least one programming language, understand how to use command lines, and have concepts of how cloud storage works. They may have seen others using cloud storage, however, they do not have experience using cloud storage themselves.

There are no age, gender, or education limitation to this research.

## Method

### Baseline Measurement done by Diagnostic Method

We plan to baseline the launched Google Cloud Storage by doing a diagnostic user test that captures measurements from users and their feedback as they demonstrate specific tasks. We will add survey questions to capture insights from their user experience and ask for comparison with other cloud storage products.

We will ask them to carry out the same tasks by using the Cloud Console (the web interface) and the gsutil. Both categories of users will go through similar set of tasks on these two tools. We will test the users in a public, safe and comfortable location.

## Five-E's of Use:



## Balance of Five E's of Use<sup>1</sup>

The 5 E's of Use<sup>2</sup> help us visualize the balance of needs for each dimension of usability and guides design choices.

- Effective: How completely and accurately the work or experience is completed or goals reached
- Efficient: How quickly this work can be completed
- Engaging: How well the interface draws the user into the interaction and how pleasant and satisfying it is to use
- Error Tolerant: How well the product prevents errors and can help the user recover from mistakes that do occur
- Easy to Learn: How well the product supports both the initial orientation and continued learning throughout the complete lifetime of use

1.Quesenbery, Whitney; Whitney Interactive Design, 2002-2011; <http://www.wgusability.com/index.html>

1. Quesenbery, Whitney; Whitney Interactive Design, 2002-2011; <http://www.wq usability.com/index.html>
2. Quesenbery, Whitney; Whitney Interactive Design, 2002-2011; <http://www.wq usability.com/articles/getting-started.html>

### Open ended questions

Our test will include open, unstructured, questions to gather qualitative responses, refer to those questions for which the response patterns or answer categories are provided by the respondent, not the interviewer. Our open-ended questions typically begin with words such as “Why” and “How”, or phrases such as “How do you feel...,” or “Tell me about...”.

### Think Aloud Protocol

Think Aloud protocol will also be a method we request our testers to perform since it will allow us as researchers to understand (almost like being in their mind) the thought process of a subject as they use a product, device, or manual.

### Breakout framework for Test Evaluation

We will ask for expectation of the overall experience for Google Cloud Storage upfront on the Console and the gsutil tool and re-ask at the conclusion of the test for final overall experience assessment. We are going to host the test in two buckets one for the Console and the other for the command line tool gsutil. We will evaluate a set of tasks for each bucket and at the conclusion of a task, inquire on experience with utilization of the 5E's and open ended questions. Evaluation will also be held for each bucket and conclude with an overall evaluation and interview style conversation.

### Session Outline and Timing

Each session will take approximately 1-2 hours. We will spend 10 minutes for introduction, instructions, and the test-ing process, with 60 minutes for actual testing, and 15 minutes for post-test survey and interview.

### Pre-Test Arrangements

- For novice users: we will provide participants a laptop (either a PC or Mac, since tool does not have any system requirement restrictions) that is pre-installed with Python and gsutil tool.
- For experienced users: the participants will be given a laptop (either a PC or Mac, since tool does not have any system requirement restrictions) to install Python and gsutil tool.

#### General Preparation:

- A Printed copy of consent forms, the task description, and survey questions.
- Prepare both Mac and PC for participant to choose for testing.
- We will prepare login information including test gmail accounts on the Developer Console for users to perform the initial tasks.

### Introduction to the Session

Prior to the start of the test, we will provide an overview of the usability testing to the participant, what he/she should expect from the test, and the roles of the moderator, note taker, and/or observer. We will explain the goals of our test to the participant. Each participant will conduct the test individually with our 5G's user research team.

### Tasks

Each participant will be given a task to complete and they are permitted to talk aloud as he/she walks through each task flow. Though, we will not be using the think aloud protocol each task could be time-consuming and if they struggle we may ask for them to proceed. We will take notations from participation observation

## Task Evaluation

At the end of each task, we will ask each participant questions regarding that task using the Likert scale combined with the 5E's of Use, and open ended questions. These will allow us to capture data for baseline measurement, recommendation, and competitive analysis. We will include review at the conclusion of each bucket from the console and the gsutil tool. The feedback will help provide qualitative and quantitative data to our study that are important to our client.

## Post Test Debriefing

After all the tasks are completed, we will conclude the test with a brief interview and survey questions to assess the overall satisfaction/dissatisfaction with the Google Cloud Storage experiences.

The moderator will have a brief interview with survey questions for the participant to answer.

## Post - Test Arrangement

Thank each participant and give out Google Swag, a cosmetic hand cream, and gift cards.

Uninstall gsutil and python

At end of testing return laptops to the lab.

# Task lists

First, we will ask the users to rate their expectation of their experience with the Google Cloud Storage service in 5 point Likert scale and incorporation of the 5E's of Use. We will ask participants to locate Google Cloud Storage Overview, and complete the following tasks that are broken into the Google Developers Console and the command line gsutil tool. The first set of tasks will be associated with the Console.

## Google Web Console

Task 1-5 will be associated with Google Developer Console:

### Task 1:

You have setup an account on the Developer Console and would like to start the service. You want to limit the accessibility of your project to team members only.

Goals: Login into the console

Enable the services that are needed for create/upload/download data for private use.

Navigate the console

### Task 2:

Task Question:

You want to store an image into the folder and label it. Then save image to your desktop.

Moderator: Provide hint for participant if they are not sure what to do.

Hint 1: create a new project

Hint 2: create a bucket

Hint 3: upload the image to the bucket

Goals: Upload/download data to a bucket

Create and use a folder



### Task 3:

#### Task Question:

You want to access the image you just stored in your folder and make a copy to a new location, and delete the original item.

Goals: Use the Cloud Console to manage data on the clouds

Moderator:

### Task 4:

#### Task Question:

You need to share the image with one of your associates who is not a team member please share the image to her at shufanwen@gmail.com or vbriscoe4@gmail.com Make sure to input the description of the image on the Console.

Goals: Share data publicly

Add a non team member to the image file for sharing.

Set up object permissions and metadata

### Task 5:

Add a private member to the project her name is Vina and her email is Vina@uw.edu

Goals: Add a member to a project

Note: Moderate proceed with "Overall Questions for Console Bucket".

Task 6 - 10 will be using gsutil command line tool

### Task 6:

Instead of using the console, now access the cloud storage by using the command lines. You would like to use gsutil to log in.

Moderator: Ask participant if the online instruction is clear

Goals: Install gsutil

Configure the environment to use the gsutil by reading the online instruction.

### Task 7:

You installed gsutil and wanted to test the installation

Moderator: If participant stuck, hint: e.g. Python gsutil test

Goal: To test the installation of gsutil

### Task 8:

#### Task Question:

You want to store an image into the folder and label it. You want to setup custom metadata to be used with an application.

Moderator Hint 1: At upload time you can specify one or more headers to associate with objects, using the gsutil -h option



Goals: Create a new project  
Upload and access data  
Setup and configure a website bucket and folder  
Work with a set of object metadata

#### Task 9:

Imagine you would like to access one of the public data. What will you do?

Goal: Access public data with and without credentials

#### Task 10:

You want to access the image you just stored in your folder and make a copy to a new location, and delete the original item.

Goals: Use the gsutil to manage data on the clouds

#### Task 11:

You need to share the image with one of your associates who is not a team member please share the image to her at shufanwen@gmail.com or vbriscoe4@gmail.com Make sure to input the description of the image on the Console.

Goals: Share data publicly  
Add a non team member to the image file for sharing.  
Set up object permissions and metadata

#### Task 12:

You want to delete the bucket from your list.

Goals: Work with projects

#### Task 13:

Add a private member to the project her name is Vina and her email is Vina@uw.edu

Goal: Add a member to a project

Note: Moderator proceed with "Overall Questions for gsutil Bucket."

Note: Moderator proceed with "Overall Questions for Google Cloud Service Experiences."



## Test environment, equipment, and related logistics

### Test Environment/Setup

We will conduct the usability testing in the Puget Sound Region (Eastside, Southside, and Seattle Proper) depending on the location that is most comfortable to our participants.

We will conduct a diagnostic testing with the two category of users.

We will run through a set of basic tasks for gsutil and Cloud Console to pin-point discovery areas. Each tester will be given a laptop without the gsutil tool installed.



## General Testing Logistics

Due to the fact that some tasks on Cloud Console requires user activation and subscription, and user accounts would require access fees, our team will preconfigure user accounts for all testers to do the tasks. [Our client has already focused research on these areas and asked for us not to focus on these features for our research study].

## Facilitation approach

Each session will include at minimum one participant, one moderator, and one notetaker. The moderator will observe the participant 's use of the service, and engage conversation on how the participant feel about using this service. We plan to use Morae or Microsoft Expression to record participants' facial expression and the task.

## Data that will be collected

Pre-test survey and post-test survey results with the focus on the "Why" results captured in the open ended questions. We are aware that the participant number (N of 10 people) is low for statistical meaning; yet we feel these quantitative results would still add value and aid in recommendations for future product improvement areas.

Data	Type	How to Collec
# of tasks completed successfully	Qualitative/subjective	Post-task Assessment
# of tasks completed unsuccessfully	Qualitative/subjective	Post-task Assessment
Success using online setup/install instructions	Qualitative/subjective	Post-task Assessment
Errors or confusion using online setup/install instructions	Qualitative/subjective	Post-task Assessment
Participant rating: satisfaction of the gsutil tool	Quantitative/Objective	Survey/Interview
Participant rating: satisfaction of the Console tool	Quantitative/Objective	Survey/Interview
Usability of the gsutil	Quantitative/Objective	Survey/Interview
Usability of the Console	Qualitative/subjective	Survey/Interview
Participant rating: learning of the Cloud Storage tools	Qualitative/subjective	Survey/Interview
Participant rating: learning of the gsutil tool	Qualitative/subjective	Survey/Interview
Participant rating: usage of the Cloud Storage tools	Qualitative/subjective	Survey/Interview

Data	Type	How to Collec
Participant rating: usage of the Cloud Storage tools	Qualitative/subjective	Survey/Interview
Survey: likely of using this product over other similar products	Qualitative/subjective	Survey/Interview
Survey: likely recommending Google Cloud Storage to friends, co-workers, or businesses.	Qualitative/subjective	Survey/Interview
Participant's path per task	Qualitative/subjective	Observation/Notes/Video

## ∞ Reporting (document, presentation, etc.)

- A test plan (this document) describes our user study and the general approach
- Screening questionnaire
- Consent form
- Facilitation script
- A task list
- Interview questions
- Post-task survey
- Note taking forms, audio/video recording, and pictures taken during the study
- A presentation to the class concluding our findings
- High-level analysis from quick as comparative products with user experience findings
- A final written report of complete findings for the client