



## Final Report

Abdulrahman Jabour | Alexander Gountras | Said Achmiz | Yamini Karanam

Fall 2013

# Table Of Contents

<b>I. Summary</b> .....	3
A. Executive Summary of Evaluation Process .....	3
B. Overview of Application .....	3
C. Major Findings Summary.....	4
<b>II. Inspection Methods Used</b> .....	5
A. User Demographics and Background Information .....	5
B. Description of Severity Ratings .....	7
C. Summary of Task Based Scenarios .....	7
<b>III. Inspection Results</b> .....	8
A. Task Descriptions .....	8
B. Task Completion Rates .....	9
C. Issues Found .....	12
D. Post test Questionnaire Results .....	23
E. Comparison of issues (Expert and User Evaluation) .....	25
<b>IV. Recommendations</b> (Summary of Recommendations).....	28
<b>V. Synopsis</b> .....	31
<b>VI. Appendices</b> .....	32
A. Data Collection and Testing Environment (Hardware and Software Used) .....	32
B. Informed Consent Form .....	33
C. Test Script and Scenario .....	34
D. Background Information Questionnaire .....	37
E. Post Test Questionnaire .....	38
F. Participant Quotes .....	40

# I. Summary

## A. Executive summary of evaluation process

This report includes the methodology and result of the usability testing for Google +. The tasks selection and method development was based on our previous usability inspection findings.

The Google + components included in testing are Google + main page, Google Hangout, and Google Hangout on Air. The study included 9 participants, mostly students ranged from 18 to 35 years old. Participants were invited to take pre and post questionnaire. The pre questionnaire included demographic and questions about their familiarity and understanding of the similar products where the post questionnaire was to evaluate their experience and opinion of the included Google + components. All testing sessions included one facilitator and three observers. The sessions were recorded for review and deeper analysis using silverback or Blueberry Flashback for in-person testing and Skype for remote testing.

In general, the results show frequent patterns of lack of discoverability where the design seems to be more based on recall rather than recognition. Another common issue was the inconsistency which makes it difficult to navigate through. Apart from the functionalities and defects like the absence of posts ordering and the inability to un-mute users, most of the usability violations are likely to be encountered with the first time users. The design seems to be directed toward regular users who already know the application features and scope.

## B. Overview of application

As stated previously, Google + contains several like creating connection circles, share posts, place, events, and communicate through chat and video. Since the application is very large with wide variety of features, we selected some of the main, commonly used sections for this usability testing. The included sections were; the main page, the Hangout, and the Hangout on Air.

- The main page includes the posts of comments, events, pictures and videos.
- The Hangout is video communication feature that allow two or more users to make video calls, chat, and share screens or links.
- The Hangout on Air is similar to the Hangout but it also stream publicly through Google and YouTube.

## C. Major Finding Summary

The result of this usability testing have several usability issues with various severity. Below are the most common issues, and more details are described in the result section.

### Home page- Stream

- The lack of posts orders; most users think posts are orders by time.
- Posts are not necessary relevant to users profile. Apart from the posts that user or user circle post, there are irrelevant posts that could not be explained.
- The icon location to switch the layout in the stream page is unexpected. It is located in parallel with the circle groups.

### Hangout

- The inconsistency of user control in the mute function. Users were able to mute others but not un-mute them. Where the muted user can always un-mute himself.
- Users has their mute function and other control functions shown in their screen but the control where they can mute the other users in the conversation are hidden.
- The signal strength icon in the Hangout screen was represented by an icon that is commonly used to indicate volume.

### Hangout on Air

- The navigation to the Hangout on Air is inconsistent with the Hangout. The Hangout was accessible from the contacts on home page, while the Hangout on Air need to be accessed from the main menu and then to Hangout page.
- No indication that the Hangout on Air session is being recorded, or how, where to access it. Most users were unable to find it after ending the session or knew how to edit it.

## II. Inspection methods used

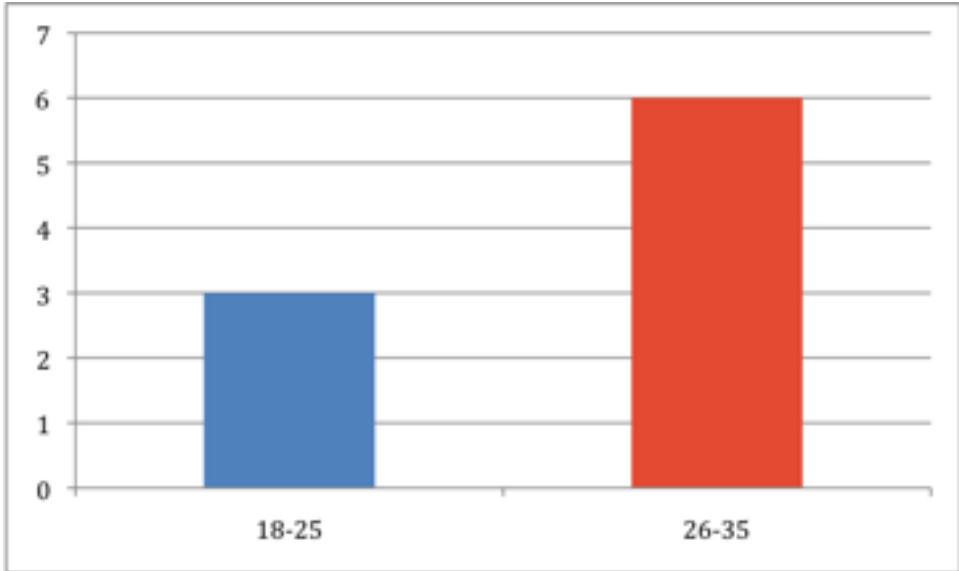
The inspection method used in this paper was usability testing. Where the previous report consists of the heuristics evaluation and cognitive walkthrough, this was established to assess our previous finding. Where some of previous finding might be over or under looked by the evaluators, this was to validate through user testing.

There were four experts were each time one will be the facilitator and the remaining three are observers. In total there was 9 users tested, two of them were online remote testing. Due to the nature of the application interaction, each time one of the observers was assigned to interact with users online for tasks like adding comments on the user wall page or be at the other side to receive the video calls.

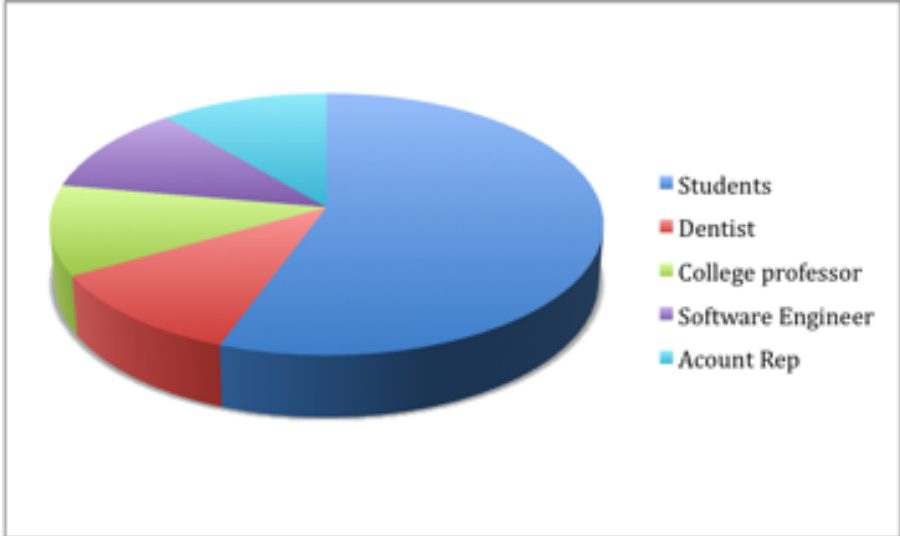
### A. User Demographics and Background

In this usability testing, we recruited 9 users. There were 6 male and 3 female. Their ages ranges from 18 to 35 (graph 1). Five of them have used Google+ one way or another, were the other four never used it. All of them were familiar with Facebook, Twitter, and YouTube, but fewer were familiar with other applications like Tumblr, Flickr, LinkedIn, Myspace. As for other video conferencing applications, six of them were familiar with Skype were only few of them were familiar with Facetime or WebEx.

As for user background, five of them were students, one was college professor, one software engineer, one an accountant, and one dentist (graph 2).



Graph 1; users distribution by age group.



Graph 2; users distribution by occupation.

## B. Description of Severity Ratings

**0** = I don't agree that this is a usability problem at all

**1** = Cosmetic problem only: need not be fixed unless extra time is available on project

**2** = Minor usability problem: fixing this should be given low priority

**3** = Major usability problem: important to fix, so should be given high priority

**4** = Usability catastrophe: imperative to fix this before product can be released.

(Nielsen 1995).

## C. Summary of Tasks and Scenarios

The previous report included the results of the heuristic evaluation and cognitive walkthrough. The heuristic evaluation was page oriented where we evaluated the layout for usability fundamentals, where the cognitive walkthrough was tasks oriented.

Similar to the cognitive walkthrough, this usability test was mainly tasks oriented, however it also included some non-tasks oriented questions to evaluate some of the previous findings in the heuristic evaluation. During the usability testing, the facilitator acts as another user to support some of the tasks that need an interaction with another user like comments, chat, and video calls.

We broke the evaluation down into three scenarios each covering a different section of Google+:

Scenario 1: G+ Stream

Scenario 2: Google Hangouts

Scenario 3: Google Hangouts on Air

## III. Inspection Results

### A. Task Descriptions

We gave users a total of 16 tasks to complete using three different scenarios. We had a separate scenario for each area of our site (Stream, Hangouts and Hangouts on Air). All Tasks are listed in detail below.

#### G+ Stream

**TASK 1:** Log into Google+ with the credentials provided, look at Stream and find most recent post in stream

**TASK 2:** Switch the Stream Layout

**TASK 3:** Post a photo (provided) to your stream.

**TASK 4:** Post a video (provided) to your stream and play the file in the post window.

**TASK 5:** “Like” the comment that just got posted, or indicate that you approve of it.

#### Hangouts

**TASK 6:** Start a new Hangout to have a text chat with one of your friends.

**TASK 7:** Show me how you would see who is currently in the Hangout with you.

**TASK 8:** Explain what you think the video icon (in the text chat window) would do if you clicked on it. Click on it.

**TASK 9:** In the video hangout explain how you would mute or kick someone? Mute another user.

**TASK 10:** Unmute another user.

**TASK 11:** Kick another user.

**TASK 12:** End the call

#### Hangouts on Air

**TASK 13:** Start a Hangout on Air.



**TASK 14:** End Hangout on Air

**TASK 15:** Explain what the status of the hangout is after they end it and how you would post the Hangout to your stream.

**TASK 16:** Edit the Hangout video.

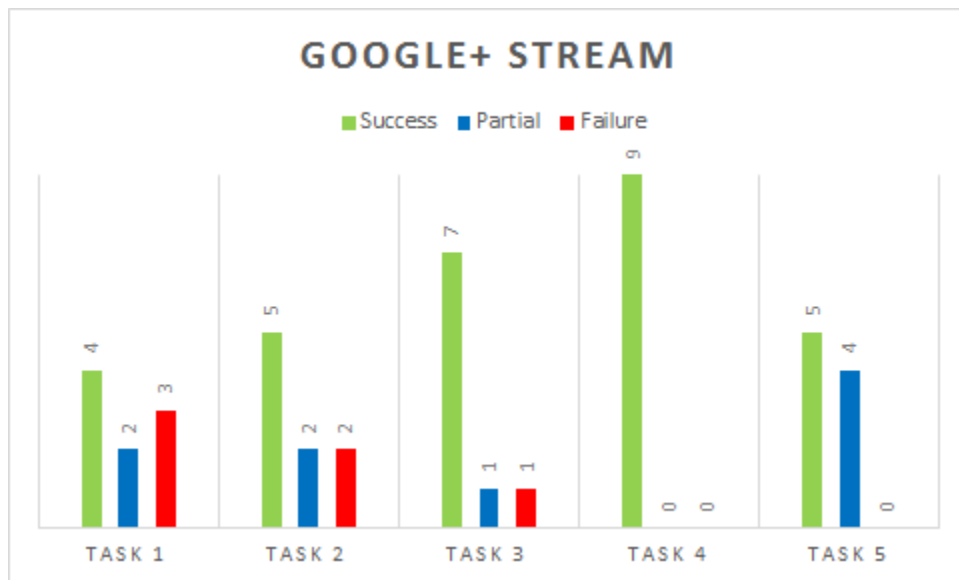
## B. Task Completion Rates

We had 9 users complete a total of 16 tasks. We used our 3 different scenarios in order to complete all tasks. We kept a record of each user using a data completion spreadsheet and compiled the information below.

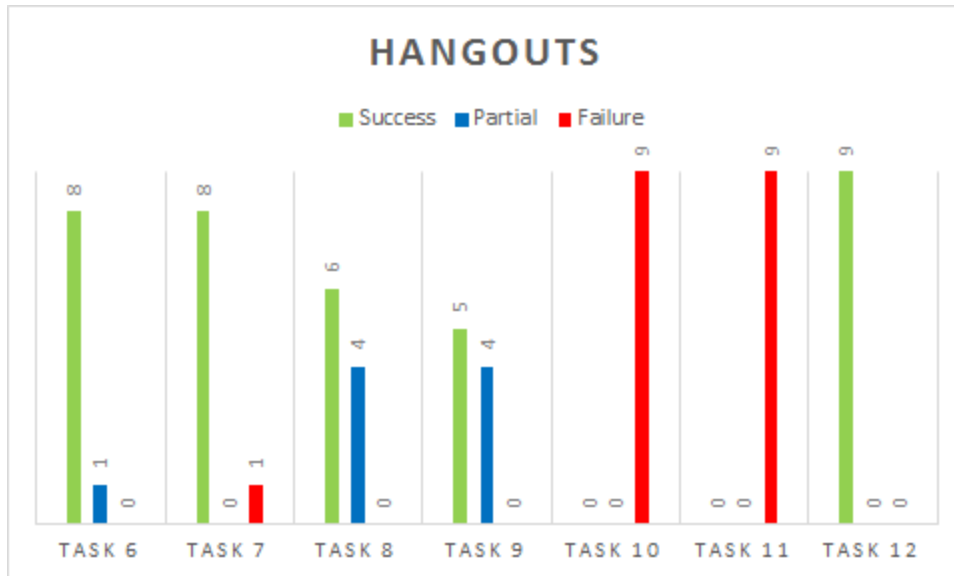
### Levels of Success

We mainly focused on qualitative data given the nature of the site we were evaluating. However, we were able to measure the Level of Success for each task by using three possible levels of success:

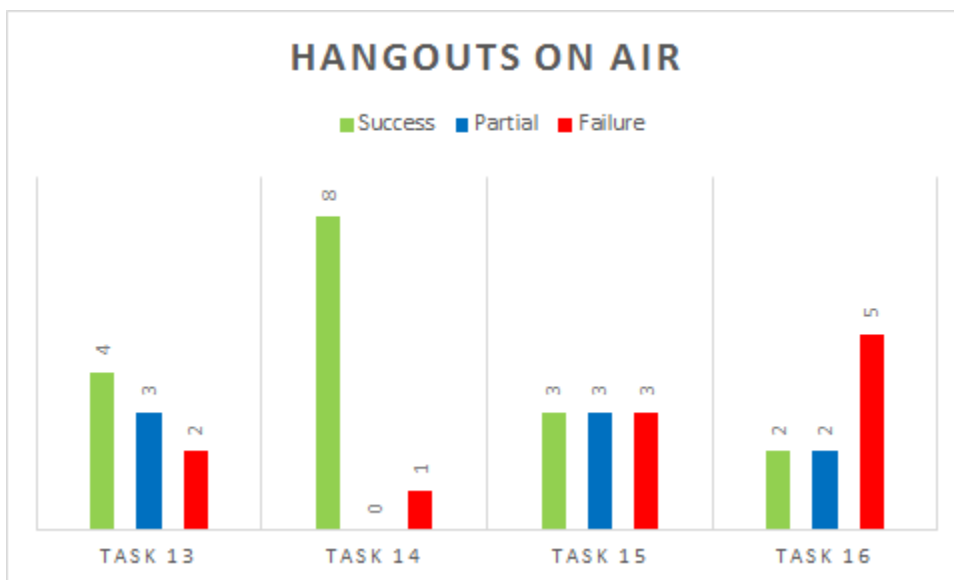
1. Success
2. Partial
3. Failure



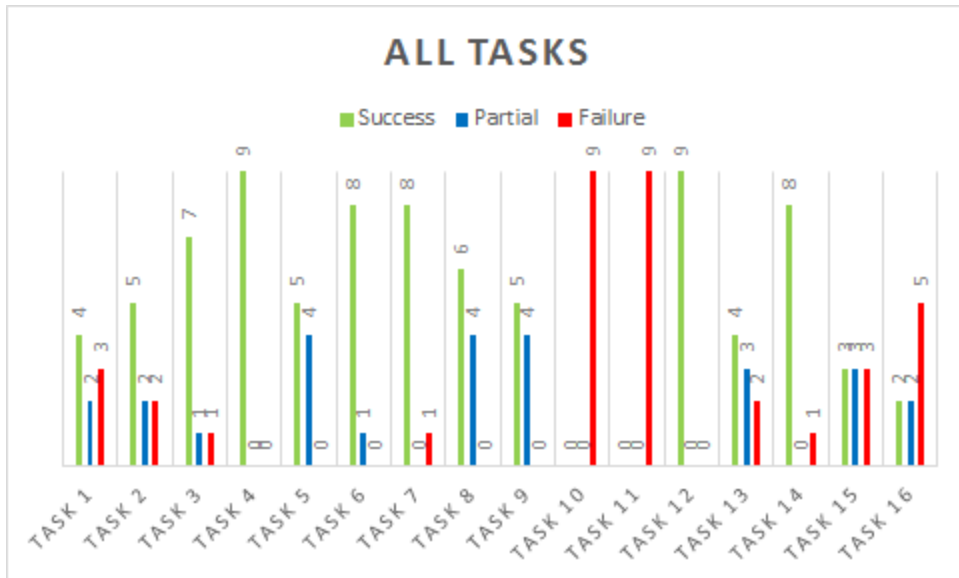
*Figure: Google+ Stream Levels of Success*



*Figure: Hangouts Levels of Success*



*Figure: Hangouts on Air Levels of Success*



*Figure: All Tasks Combined Levels of Success*

## C. Issues Found (Qualitative)

### Global Issues:

Throughout our expert evaluation and again when doing our user testing we ran across various issues that seemed to repeat themselves throughout different areas of Google+. These issues did not just expose themselves in one specific section of Google+ but were visible issues throughout the site. There are underlying problems that lead to further confusion throughout our evaluation and usability testing. Because there was not one section of the site to assign these issues to, we decided to label these as “Global” issues.

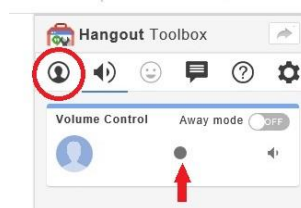
Note: *We did not assign a severity rating to these “Global” issues being that these were not included in our task-based scenarios. These are general observations.*

#### 1. Lack of Discoverability:

Throughout user testing we noticed that there was a real issue when it came to people intuitively knowing what they were clicking on, how to go about completing a task and lack of recognition. Users tended to treat Google + as a “click and play” environment in order to accomplish different tasks. It seems as though users relied a lot on error prevention while going through different scenarios instead of being guided by clearly labeled buttons, guiding visuals and throughout the site.



Example: signal button mistaken for volume



intuitive consistency



#### User Quotes:

*“I would start clicking on random buttons until one of them told me this information.”*

**Recommendation:** Either make icons and buttons more understandable or label buttons throughout the site. When making design decisions, keep in mind what is universally accepted and what intuitively works instead of trying to reinvent the wheel.

#### 2. Constant Changes to Interface Design and Learnability Issues:

From the time we started our team evaluation to the time we did user testing Google+ changed its interface design in a few different areas. We noticed this most notably in the Hangouts video chat section of Google+. It seems as though Google+ has an ever changing environment which does not promote learnability for the user. By the time the user learns the way Google+ operates, the environment changes again. This starts the learning process over for the user. When making changes to Google+ none of the functional issues we ran into as a team were fixed. It appears there were only cosmetic changes taken into account.

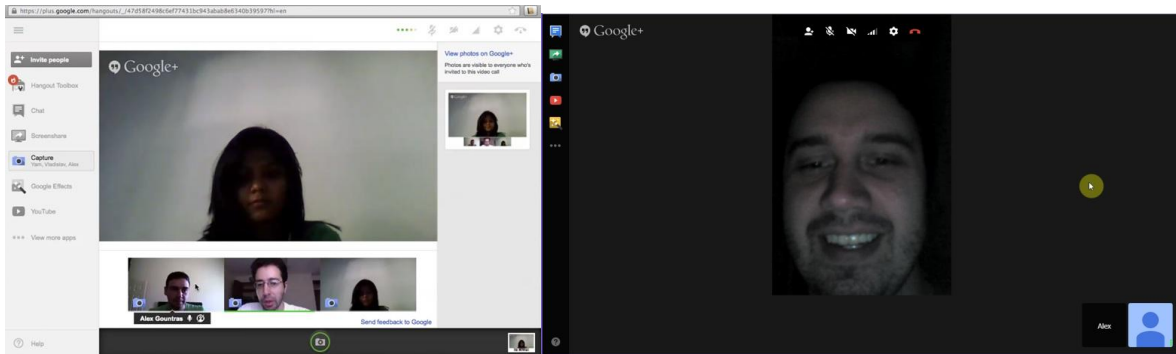


Figure: Hangouts video mode before and after changes were made to the site

**Recommendation:** Move away from changing random parts of the Google+ frequently. Change it less often, but make real effective changes to all parts of the site at the same time. Also, when making changes to the site, make sure functional issues are taken into consideration as well as aesthetics.

### 3. Notifications:

Notifications can be a confusing when using Google+. There are multiple places notifications show up making it difficult for users to identify if there is one or more than one notification coming across. The notifications are also conveyed with different types of icons. There is also substantial lag involved with posts and notifications. Sometimes the lag can be up to several minutes.

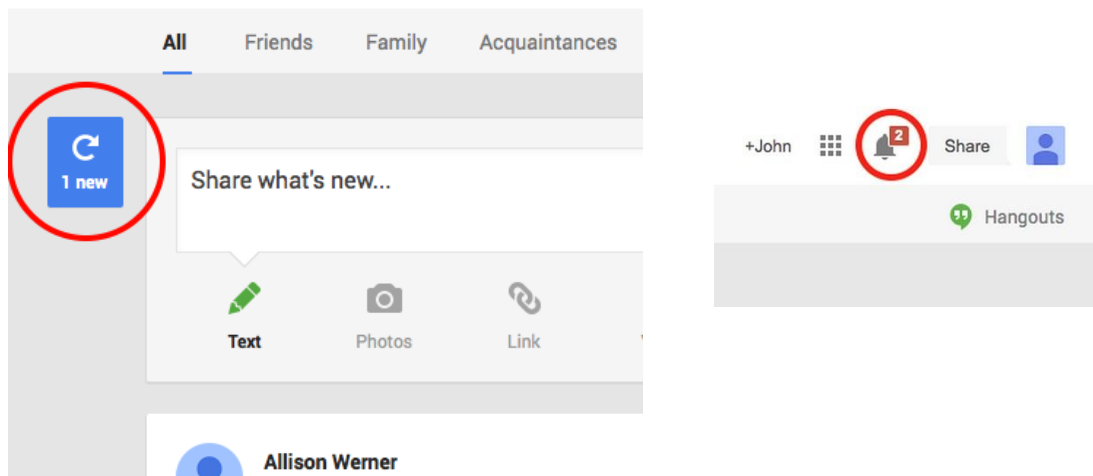


Figure : Notifications

**Recommendation:** There should only be one notification that comes up on the screen if it is referring to one item. Notifications should use universal icons and be clear to the user. Posts and notifications should be instant. If there is a reason the lag is occurring it needs to be fixed on the back-end.

## Google+ Stream:

### 1. Identifying Order of Posts and Content      Severity: 3

Most of our users assumed the first post was the most recent in the stream. In most cases they were ultimately correct. Out of 9 users 4 were successful, 2 partially completed and 3 failed. Only until further exploration did they realize that the posts are not necessarily organized by time or date. Because of this confusion we could go as far as saying that all users only partially completed the task because their assumption of post order was incorrect even though they were able to execute the task correctly most of the time. Users also assumed that posts were relevant to them but after completing our expert evaluation and then further observing the posts, we have come to the conclusion that there is no rhyme or reason to the order or content of posts on the stream.

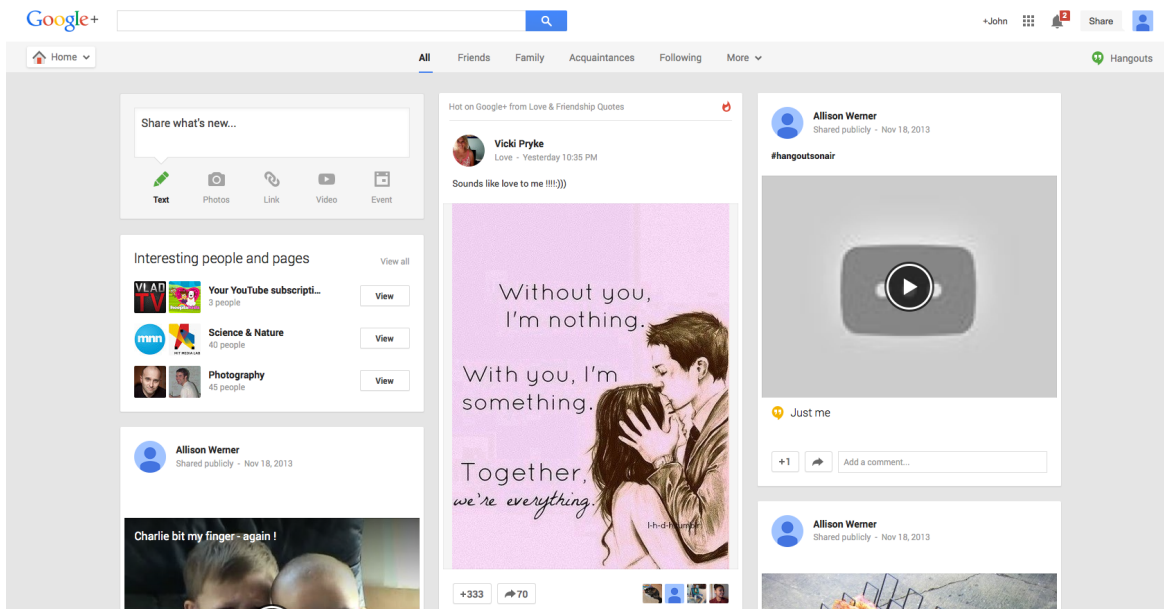


Figure : Order of Posts

### User Quotes:

*"In order to figure out what was the most recent post I would need to look at all of them."*

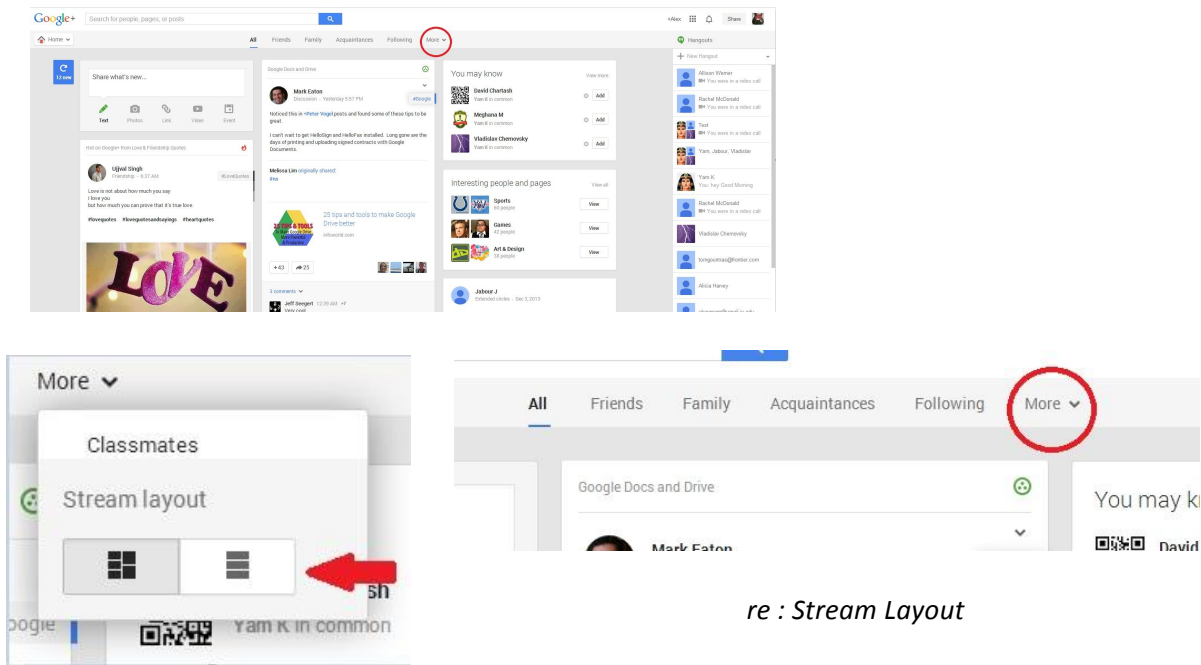
*"I think it is interesting that Google just decides that you want to look at stuff."*

*"Looks like just random things are posted."*

**Recommendation:** There needs to be a clear way for users to understand how the stream works. This should consist of a chronologically ordered stream that selects the most relevant posts for the user to view.

## 2. Switching the Stream Layout      Severity: 3

Out of our 9 users 5 were successful, 2 partially completed the task and 2 failed. Almost half of our users could not figure out how to change the stream layout. For the ones that did, it took quite a bit of effort and a couple had almost given up before locating. Given that organization is already a problem on the stream page this seemed to add to the confusion.



Figure

re : Stream Layout

### User Quotes:

“I’d look further if I really wanted to but nothing jumps out at me.”

“Oh, there’s a “More” button. That is kind of silly place to put it.”

**Recommendation:** Make a clear and obvious button that indicates a stream layout change option to the user. Place this button somewhere directly on the page and remove from the “More” section.

## 3. ‘Liking’ Comments or Posts      Severity: 2

Users were asked to ‘Like’ a comment that was posted to their wall. Although all of our users were able to complete this task, there was a great deal of confusion on what exactly ‘+1’ meant and how it worked. We had 5 successful completions and 4 partial completions of the task. Most users clicked on the button

and still seemed a little confused on how this functioned. Before you click on the '+1' button it remains '+1' but highlighted. When the next user clicks on the highlighted '+1' it changes to a '+2'. It was confusing for both our team evaluation and in user testing when the '+1' button was clicked for the first time. It did not change the icon, only highlighted it.



Figure : Like (+1)

#### User Quotes:

*"+1? Not too sure... A little confusing on how the +1 button works"*

*"Where is the name of the person that gave me a '+1'? I didn't expect to be able to give myself a +1."*

*"This '+1' button, I assume that's a 'like'... Largely because of Google's media advertising."*

**Recommendation:** Make 'liking' a post more intuitive and clear, specifically when it comes to feedback to the user. When clicking on the '+1' button for the first time, it should clearly change appearance. Instead of just highlighting it, it should perhaps change font or indicate to the user that they have already completed this action more clearly. There should also be a way for users to tell who 'liked' what.

#### Hangouts:

##### 1. Start a video hangout Severity: 2

All the participants were able to complete the task ultimately but they never knew what they initially started. They hit the one of the entries in right hand corner of the screen under hangouts mostly mistaking it for the list of friends. The list is a history of video hangouts. When the users hit one of the entries, they expected to start a video hangout. Instead, a text hangout is started. From the text window, a video camera button is used to start the video hangout. But that doesn't close the text hangout or convert the text hangout into a video hangout. What further confuses the users is that the chats in the text hangout and video hangout are independent.

The '+ New Hangout' bar isn't prominent enough to be noticed by the user on a glance which is why the users fail to understand how to start a hangout with a contact not in history.



**User Quotes:**

[answering "what do you think this button (video) does?", in Hangouts text chat window] "Transform this into a video chat."

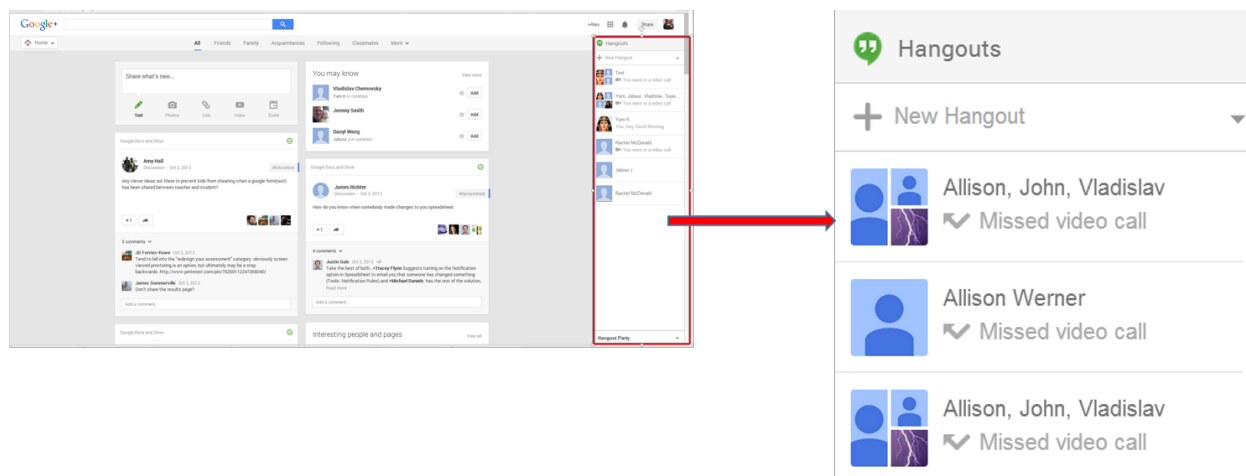


Figure : Start a video hangout

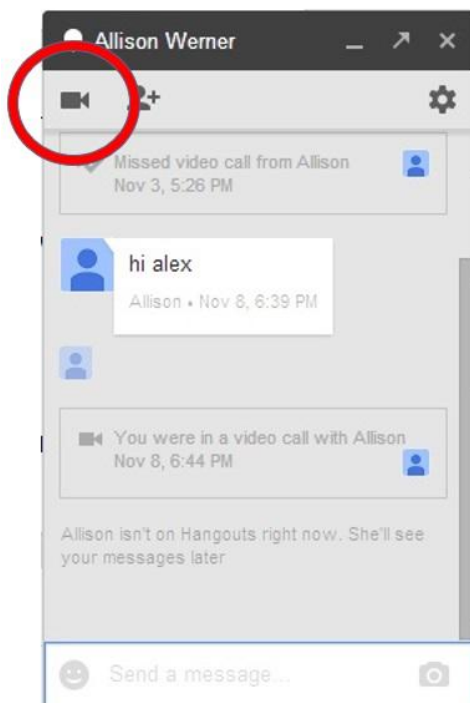


Figure : Start a video hangout

**Recommendation:**

The '+ New Hangout' should be a more prominent 'call for action' button. The list of contacts should be sorted in the order of mostly used contacts followed by recently used followed by the rest of the

contacts. The history should be a tab beside the contacts but not be displayed by default. Taking into account the next issue, when the user hits the contact in the list, a text hangout should start showing options for video hangout.

## 2. No prompt before starting a video hangout Severity: 1

The video hangout starts once the user hits the video camera button on the text hangout (Figure )or by selecting similar button in the '+ New hangout' bar (Figure ). But the participants of our study complained that it started too abruptly without a warning that they were going to be captured on the click of the button.

### User Quotes:

*"Yes, I would expect a prompt before the video mode comes up."*

### Recommendation:

The users should be prompted with a message saying "Starting a video hangout..." so they are prepared to be captured.

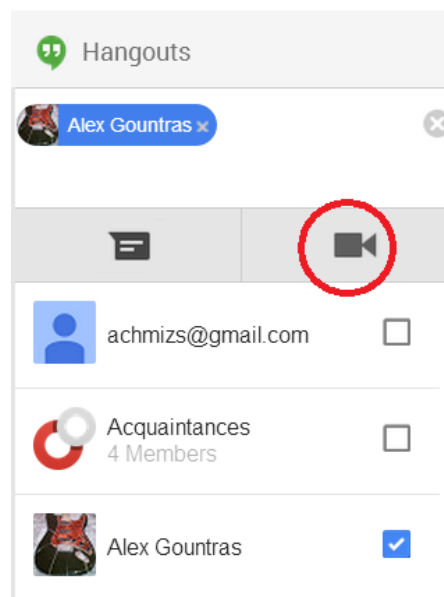


Figure : Start a video hangout

## 3. Mute/Unmute Severity: 2

When the participants were asked to mute participants on the call, most of them muted themselves first. It was difficult for them to figure out if such feature existed. Most participants thought the 'call-to-action' mute button on top was to mute the rest of the participants because they initiated the call. But the mute option for the others is in the menu (Figure ).

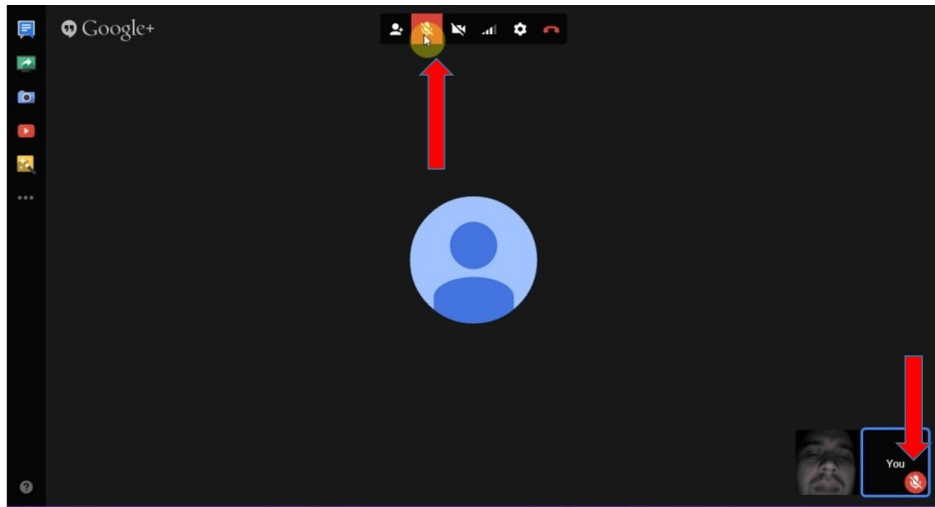


Figure : Mute participant

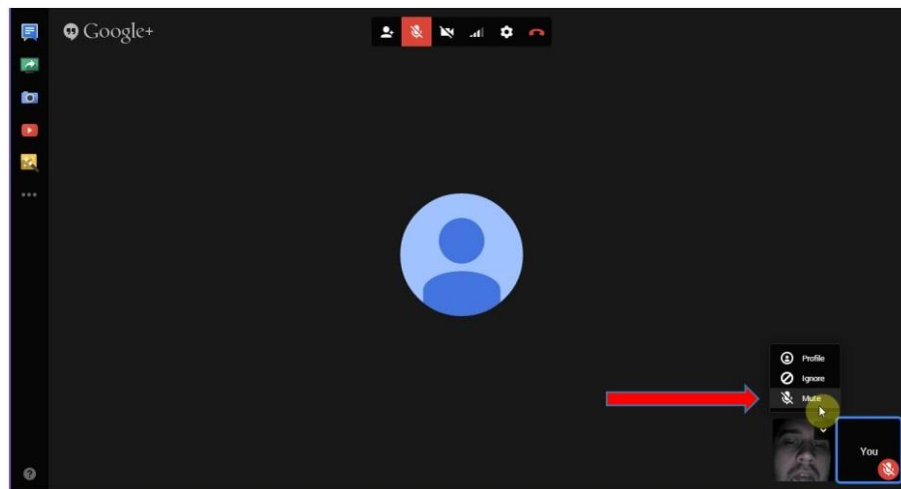


Figure : Mute/ Unmute participant

When the participants were asked to unmute the muted participant, all of them failed to do so. Once muted, the option is disabled. Then, only the person who is muted can unmute himself/herself which confused the participants even more when the callers were randomly unmuted.

#### User Quotes:

*[How would you unmute a user?] "Probably going through the same... uh... that seems like it would work... .. I'm actually kind of befuddled here."*

*"Microphone on top? I think I just click again to un-mute. Oh wait maybe I have to un-mute at the top of the page? That is strange I am able to un-mute. I should be able to do both. Both of us should be able to un-mute or mute if we select mute."*

*"I should be able to unmute him but I can't. It's actually greyed out. It's not supposed to be."*

#### Recommendation:

The mute button should be displayed on the incoming video. If the user can mute a caller, then he/she should be allowed to unmute too.

#### 4. Signal strength looks like volume Severity: 1

At least 3 out of 9 (33.3%) participants tried to adjust the incoming volume by clicking on the signal strength.



*Figure : Signal strength*

#### Recommendation:

The participants didn't seem to be concerned about the bandwidth. So, this could be removed from the menu.

### Hangouts on Air:

#### 1. Start hangout on air Severity: 4

Not a single participant could start a hangout on air without minesweeping or being clued about where to look for the option. The location of this option also changed during the testing but participants both of them equally difficult to find (Figure and Figure ). One of the participants even tried to look up on google how to start hangouts on air.

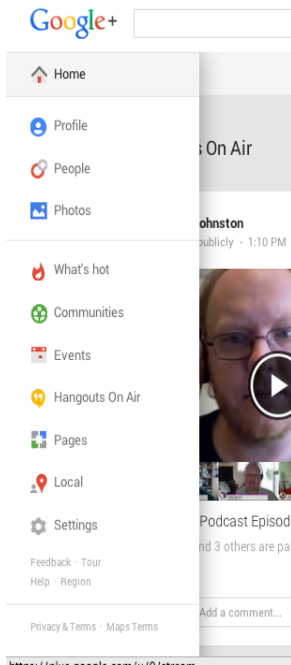


Figure : Start Hangout on air

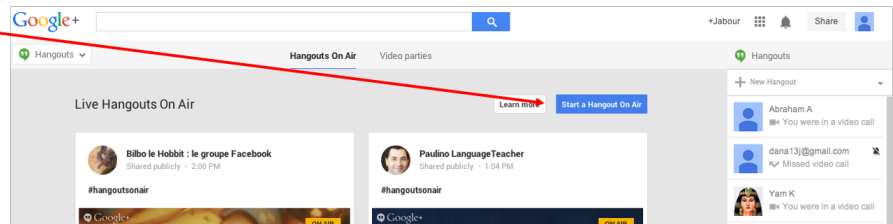
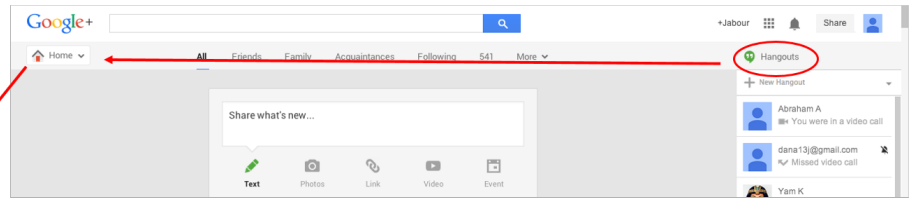
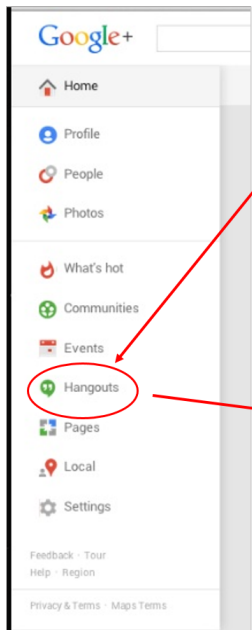


Figure : Start Hangout on air

User Quotes:

[Asked how you would start a Hangout on Air] [My] "first instinct is to click on all the buttons."

[Have you used hangouts on air before?] "I've done it by accident."

Recommendation:

The users should be able to convert a video hangout to hangouts on air when they find the need to broadcast and vice versa because all the participants looked for the hangouts on air option in the hangouts section.

## 2. Edit recorded hangout Severity: 3

This is another task which none of the users could finish without minesweeping or help. In fact, in this case, minesweeping of not of much help. Some users thought editing the hangout was not possible. All of them were confused about where the recording was recording was stored. There is a significant delay in posting the recording to the user's timeline. Besides, none of the users could anticipate that they had to edit the recording in another website (youtube) with a different interface altogether.

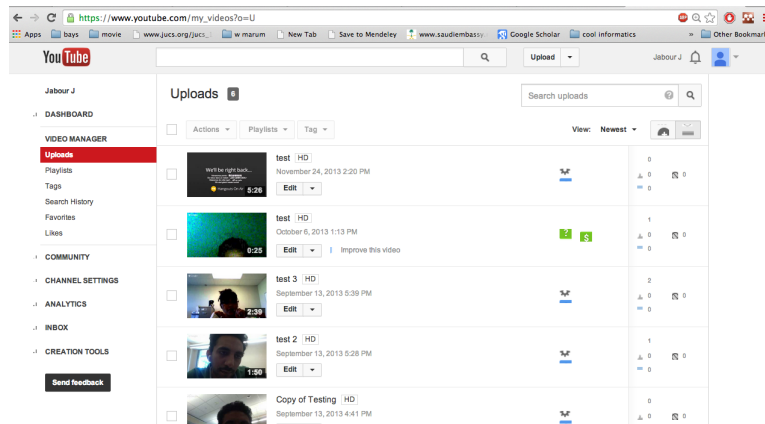


Figure : Edit Hangout on air

### User Quotes:

*"I would start by assuming that I can't! Then I would click this "Edit Post". Then... I don't even know. Then I would continue to assume that I can't, and then I would go back to what I was doing."*

*"I would expect to edit from my home profile."*

*"No, I would expect it to be a one stop thing in Google+."*

### Recommendation:

The recording should be posted immediately to the user's stream and editing tools should be provided in the same interface like they are provided for editing pictures.

## 3. Other issues Severity: 2

Most users couldn't understand when they went on air. The affordance for this is too subtle.

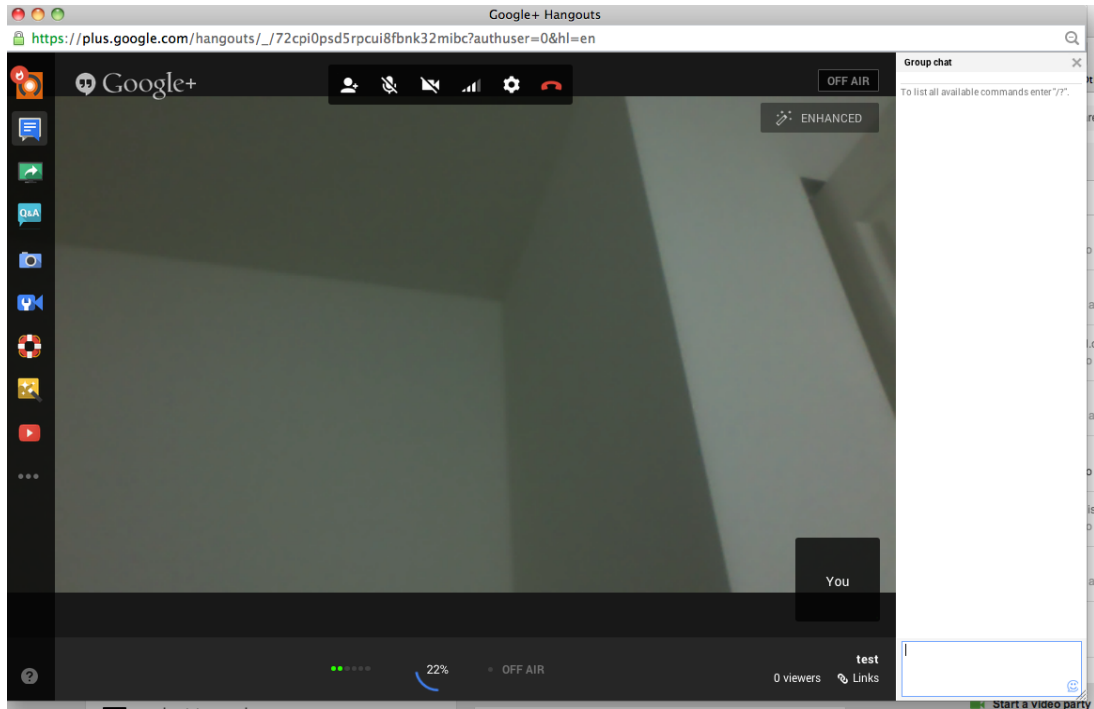


Figure : Hangout on air

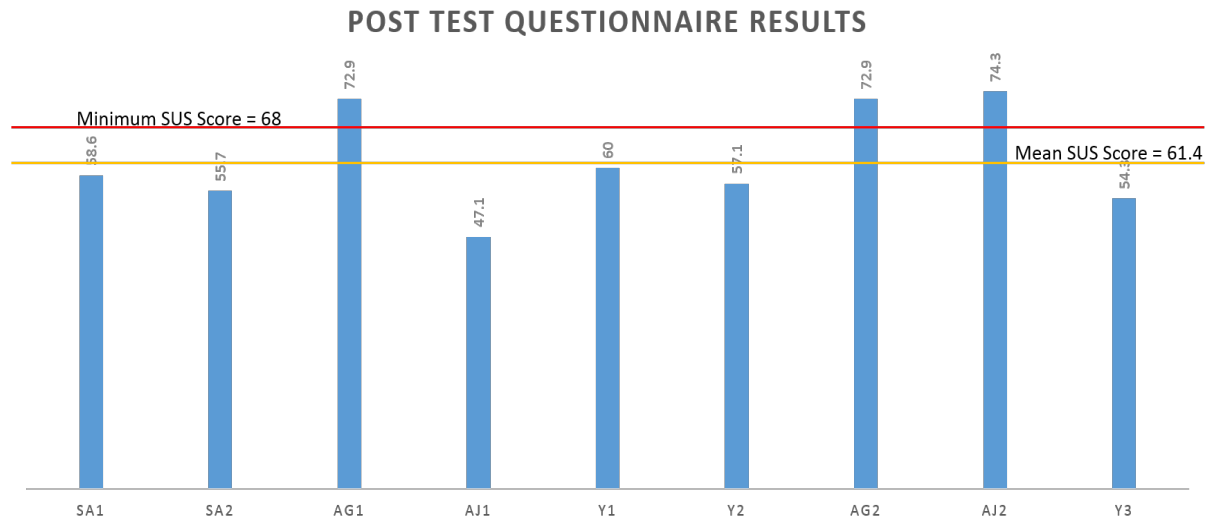
There is no way of limiting the audience of the recording. Though the users initially thought that the friends they invite to the hangout on air are the audience of the post, they later saw that it was a public post. One of the users refused to try the hangout on air feature again because public access is intimidating to her. When the hangout on air starts, the users should be allowed to choose the audience of the post. This is a serious issue of privacy.

#### **D. Post test Questionnaire Results**

The participants were asked to answer a questionnaire based on modified SUS(System Usability Scale) consisting of 14 statements. The participants were asked to express their opinion of the statements on a likert scale of 1 to 5 from strongly disagree to strongly agree.

##### **Quantitative Analysis**

The mean of the SUS scores is 61.4 which means that the interface doesn't meet the minimum criterion of 68.



### Qualitative Analysis

On analysing the responses of the post test questionnaire, we concluded that the data is not quite valid as the responses were either neutral or contradictory. Though the participants couldn't finish tasks, some replied that they were neutral about the ease of the task or some even replied that they found the interface quite easy to use. We assume that the participants weren't very honest or interested in filling the post test questionnaire due to which the results have been distorted.

For example, few responses of the participant Y3 are as follows:

Statement	Response
Overall, I am satisfied with how easy it is to use Google+	Strongly agree
It was simple to use Google+.	Strongly disagree
I found Google+ unnecessarily complex.	Strongly disagree
I think that I would need the support of a technical person to use Google+.	Agree

Therefore, the results from this questionnaire might not suggest the usability of the interface.



## E. Comparison of issues (Expert and User Evaluation)

S.No	Issue	Found in Expert Review?	Found in Usability Testing?	Different causes?	Comments
<b>Stream</b>					
1	Finding the recent post	Yes	Yes	No	
2	Changing the layout	No	Yes		The participants couldn't find the option to change the layout
3	Posting pictures	Yes	No		Multiple ways of posting pictures seemed like an issue but the users always used only one way and ignored the other.
4	Posting Videos	Yes	No		There was a lag in the videos playing after recording them. But the participants used existing videos.
5	Changing audience of an old post	Yes	Yes	No	This feature didn't exist but the users as well as the evaluators expected this to be possible.
6	Liking post	Yes	Yes	No	
7	Replying to comments	Yes	No		Though replying to posts wasn't possible, the users didn't see it as a problem.
<b>Hangouts</b>					
8	Start a video hangout	No	Yes		A few changes in the interface from the expert review to the user testing caused a lot of confusion in starting the video hangout
9	Inviting more participants	No	No		

10	Checking who joined the hangout	Yes	Yes	No	
11	Mute participant	Yes	Yes	Yes	In the expert review, we only concluded issue with visibility. But the users were confused between muting themselves and muting the callers.
12	Unmute participant	Yes	Yes	No	Because of the lack of administrative features, this option was very confusing both for the users and evaluators.
13	End call	No	Yes		Some users couldn't find how to end the call without minesweeping.
<b>Hangouts on Air</b>					
14	Start hangout on air	Yes	Yes	Yes	Though we found a problem in visibility of this option, the usability testing elevated this problem to being catastrophic.
15	Stop broadcasting	No	Yes		The users expected to stop broadcasting before ending the call.
16	End call	No	Yes		Some users tried closing the window to end the call
17	Edit recording	Yes	Yes		
18	Change audience of the post	Yes	Yes		This is a serious privacy issue which a few users found intimidating.
<b>Other</b>					
19	Content under different circles on stream page	No	Yes		A user expected to find the list of contacts under the name of each circle instead of their posts.

20	Lag in notifications	No	Yes		There is a significant lag in receiving notifications.
21	Placement of notifications	Yes	No		Due to the lag in notifications, the users didn't seem to bother much about the placement.
22	Information displayed on flipping a post	Yes	No		Though we thought that the information was unclear, users thought it was clear enough.
23	Switching between 'On air' and 'Off air' in hangouts on air	No	Yes		The users expected to stop broadcasting by hitting the 'On Air' label.
24	Different notations for posts on stream page	Yes	No		Users didn't seem to be interested in these notations.
25	Source of posts on stream page	Yes	Yes	No	

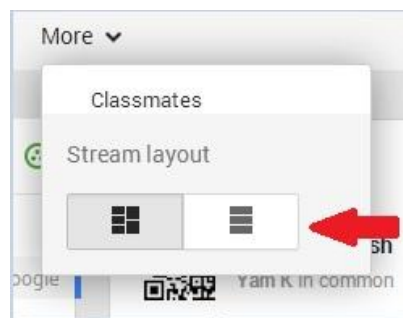
## IV. Recommendations

Overall, we recommend that Google either ease up on their singular focus on aesthetics over interface discoverability and learnability (by putting labels on buttons and other elements, and making buttons/menus look the way buttons/menus look in other apps), abandon their policy of treating Google+ users like beta testers for a constantly-changing product, or both. Google+ is too central to users' experience of Google web apps and services (and is so by design) to ignore such critical usability concerns.

Key recommendations for each site area we tested follow:

### Stream

We recommend that the jumbled Stream layout be replaced with something with a more clearly and immediately visible order and structure. Posts should be ordered chronologically; deviations from that order should be clearly marked. We have seen no evidence in our testing that users enjoy being exposed to random, irrelevant content, so insertion of "What's Hot" posts into a user's Stream should not be the default. Changing the layout of the Stream should take a single click on a clearly visible button, i.e. this (or something similar with even more useful options) should be on the toolbar (there's plenty of space available), not hidden in a drop-down menu:



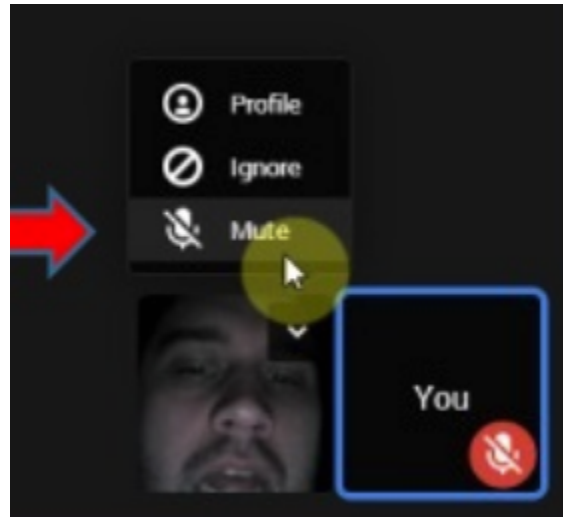
Notifications should be centralized into one interface element (the existing bell in the top-right is a good candidate for this), not spread out across three.



All notification lag issues should be fixed, as they far exceed the bounds of what may be attributed to network lag, and seriously affect user perception of the system's status.

### Hangouts

The central problem here is lack of “administration” features, such as a full set of “mute/unmute/kick/ignore user X” commands. These should be added (some, such as kick, available only to person who started the hangout); the UI for them is already there (drop-down menu from user thumbnail). (Note that some parts of these exist already, but don’t work the way they should, i.e. the way they would intuitively be expected to work.)



Starting a hangout is also problematic (see previous section for details); adding a “contacts list” button, which would show something like the “Buddy List” common to many messaging protocols, and from which the user could start a text or video hangout with any of their contacts, would solve this problem.

### Hangouts on Air

As this feature seems to be almost an afterthought, is very poorly integrated as a Google+ feature, and has numerous navigation problems, our recommendation would be to scrap the entire workflow and revamp it from scratch. Criteria for a successful redesign might be:

- Starting a Hangout on Air is quick and easy; it can be done from the same interface element as starting a regular Hangout (e.g. a Contacts list), as well as in the existing way
- The distinction between people invited to a Hangout on Air (specific contacts, *not* the Public at large) and people viewing a Hangout on Air (potentially anyone on the internet, with no restrictions) is clear to users; *or*, this distinction is reconceptualized entirely (this was a frequent source of user confusion)
- Ending the broadcast of Hangout on Air takes the user either directly to their Stream where the video is posted (immediately, with no lag), or to some “Do you want to edit your recorded broadcast” page — either way, the user should not be left dangling at the end of a broadcast, with no idea what happened to the video they just filmed

- Editing the recorded broadcast should be accomplished with a simple, easy to use interface directly within Google+, ideally accessible from the Stream post of the Hangout on Air, as well as immediately when ending the broad (NOT by having to manually go to YouTube, laboriously find the video, and use a convoluted and entirely different UI to edit)

## General

In addition to all of these, we recommend that Google fix the various bugs and glitches in Google+, which are hardly becoming of the flagship web product of a company of Google's stature (see previous section for some of these bugs). Abandoning the policy of constant iterative cosmetic changes to the interface would surely make it easier to put out a more polished and less bug-ridden product.

## V. Synopsis

Google's strategy for Google+ positions it not merely as a separate social networking web app, but as a "layer" on top of all of Google's other web services. It is designed to integrate with all the web apps that Google owns or provides. The clear intent is for a user of any Google web service to create a G+ account and use it for the foreseeable future. As such, it seems critical for the interface of Google+ to be cohesive and consistent, and for knowledge about the UI acquired when using one section of G+ to easily transfer to all others.

The current interface design does not achieve these goals. Two major, fundamental issues interfere. The first issue is the decision, apparent throughout Google+, to trade learnability, explorability, and consistency with industry standards for (ostensible, though in practice dubious) aesthetic appeal. The second issue is the frequent, unannounced changes to various aspects of the interface, which invalidate parts of a user's existing knowledge about the UI's workings, requiring the user to re-learn how to use the changed interface elements. These changes often fail to fix serious usability issues with the UI, instead focusing on altering the aesthetics of interface elements.

A final observation about Google+ is that, from what we can tell, different features of Google+ are designed by separate design teams, whose communication with each other is less than ideal. For example, the video Hangouts interface (either before or after the major redesign we witnessed) looks nothing like the text Hangouts interface, despite ostensibly being two aspects of the same feature, nor does it resemble much of the rest of Google+. (Within-feature coherence of UI design in G+ is noticeably greater than across-feature coherence.) We suspect that Hangouts on Air, given its obscure and poorly-thought-out positioning within Google+, was added on almost as an afterthought, rather than conceived as an integral part of the feature set. Our recommendation would be to establish a centralized set of design and style standards, and/or to ensure that the teams working on the various features more closely communicate with each other.

## VI. Appendices

### Appendix A: Data Collection and Testing Environment

User testing was done using a combination of in-person and remote usability testing setups.

#### **In-person usability testing setup 1: Silverback**

Participants in this setup used a Macbook Pro laptop computer with the Google Chrome browser. Silverback, running on the test machine, was used to record the participant's screen, and audio and video of the participant. One or more observers watched the participant's screen via the Mac's Screen Sharing feature while taking notes.

#### **In-person usability testing setup 2: Blueberry Flashback**

Participants in this setup used a Windows based laptop computer with Google Chrome browser. Flashback, running on the test machine, was used to record the participant's screen, and audio and video of the participant. One or more observers watched the video recording while taking notes.

#### **Remote usability testing setup**

Participants in this setup used their own machines (in both cases, a Mac, with either Google Chrome or Mozilla Firefox as the browser). The evaluator used Skype to communicate with the participants, and QuickTime Player X to record participant audio and video, while using join.me to view the participant's screen and QuickTime Player X to record the participant's screen. The two video tracks were synchronized manually during later review.



## Appendix B: Informed Consent Form

### CONSENT FORM

Indiana University, School of Informatics – IUPUI

H543: Usability & Evaluative Methods

**Project:** Evaluation of Google+ website

**DESCRIPTION:** This is a study to evaluate parts of the Google+ social media web application. This session will be recorded for data collection and used solely for academic purposes.

**RISKS:** There are no known risks associated with participating in the study.

**CONFIDENTIALITY:** Your participation in this study will be anonymous. No personal information will be distributed or shared with anyone outside this research study, unless required by law. We may use quotes from comments that you make in the course of the session; these comments will not be associated with your name or any personally identifying information. At the conclusion of this course, the video recordings will be destroyed, and no personally identifying information retained.

**COSTS:** There are no costs to you to participate in the study.

**VOLUNTARY:** Your participation is voluntary, and you may choose not to take part, or may leave the study at any time. Leaving the study will not result in any penalty, and your decision whether or not to participate in this study will not affect your current or future relations with IUPUI.

**CONTACTS:** For questions about the study, contact the researchers: Said Achmiz <[sachmiz@iupui.edu](mailto:sachmiz@iupui.edu)>, Alexander Gountras <[agountras@iupui.edu](mailto:agountras@iupui.edu)>, Abdulrahman Mohammed Jabour <[ajabour@iupui.edu](mailto:ajabour@iupui.edu)>, Yamini Karanam <[ykaranam@iupui.edu](mailto:ykaranam@iupui.edu)>.

If you have any questions during the evaluation session, feel free to ask them at any time.

**SUBJECT'S CONSENT:** Being part of this study and signing this form is an acknowledgment that you understand the nature of the study and have given your permission to participate.

Signature of the participant: \_\_\_\_\_ Date: \_\_\_\_\_

Thank you for participating in this study!

## Appendix C: Test Script and Scenario

### Test session checklist

- notepad/pen
- session checklist & introduction script (this document)
- consent form
- pre-test survey
- test (scenario/task) script
- equipment (computer with recording software and browser)
- post-test questionnaire

### Introduction script

Hi, my name is \_\_\_\_\_ and I'm going to be walking you through this evaluation session. You probably already know, but let me explain why we asked you to participate. We're testing some parts of the Google+ website to identify any usability issues it might have.

Let me emphasize that we are not testing you or your performance; we are testing the website. There's no wrong answer. As we go, I'm going to ask you to think out loud. As you look at the screen and do the things I ask you to do, just speak about what's going through your mind.

If you have any questions, just ask. I may not be able to answer right away, since we're interested in how people do when they don't have someone sitting next to them, but once we're done, I'll try to answer any questions you have.

At various points during the session, I'll ask that you look at the screen and tell me what you would do, or what you would click on, etc. At that point, don't click on anything yet, just tell me how you think you *would* do it. After that, I'll ask you to actually go ahead and do something.

With your permission, we're going to be making a recording of the computer screen, and also a video recording of the session. This video won't be seen by anyone except me, the other members of our team, and our instructor, and it will be destroyed at the completion of the course.

I'd like to ask that you sign this informed consent form. It just says that you understand the purpose of this project, that your participation is voluntary, that we'll be recording the session, and that your information is confidential. Let me know if you have any questions.

\*\*\*

<give user form>

Before we begin, I'd just like you fill out this brief survey about your background and your experience with other websites.

<give user pre-test survey>

Ok, I'm going to go ahead and start recording. Meanwhile, if you could please go to [www.google.com](http://www.google.com), click on the +You link at the top, and log in with the following email and password ...

<give user test account info>

<begin test scenarios>

...

Ok, that's it for the tasks! Do you have any questions or comments?

Did you find Google+ easy to use? Simple, easy, confusing?

Before you go, I'd like to ask that you fill out this brief questionnaire about your experience with Google+.

<give user post-test questionnaire>

Thank you! We really appreciate your participation.

## TASKS FOR EACH SCENARIO

### **Scenario 1: G+ Stream (web)**

1. Ask user to log in, look at Stream (make sure it's set to multi-column view). Ask user if they find it easy to read, confusing; ask them to tell you where the most recent post is, and in what order the posts are. If user finds it confusing, ask them if they think there's a way to switch it to some different layout.
2. Ask user to post a photo to their Stream. When editing window comes up, ask them what they think each of the icons do (before they mouse over them).
3. Ask user to post a video to their stream (provide the video file). Ask user to play the file in the post window. If it doesn't play, see what they think. (REMOVE THIS STEP IF GLITCH HAS BEEN FIXED)  
*[at this point, evaluator posts a comment on the user's post from the second testing account]*
4. Ask the user how they would "like" the comment that just got posted, or indicate that they approve of it. Regardless of how they answer, before they click anything, ask user what they think each of the +1 buttons (on the post, and on the comment) mean, and what they expect to happen if they click them. Ask user to either do what they thought they need to do to "like" the post, or, if they didn't know what to do, to click on each of the +1 buttons. In either case, ask whether what happened is what they expected.
5. Ask the user to click the "flip" button on the post that does not have a comment. Ask them what they think the text there "Nothing to see here ..." means.

### **Scenario 3: Google Hangouts**

1. Ask the user to start a new Hangout to have a text chat with one of their friends [that is, the evaluator].
2. Ask the user how they would see who is currently in the Hangout with them.
3. Ask the user what the video icon does (whether they think the video Hangout would start immediately; but don't say that explicitly).
4. Once in the video hangout, ask the user how they would mute or kick someone. Once they figure it out (or once you tell them, if they don't), ask them to mute the evaluator.
5. Ask the user to unmute the evaluator. (This is not possible, so user will fail at this.)  
*[at this point, evaluator unmutes themselves]*
6. Ask the user why/how that happened.
7. Ask user to end the call (see if they easily find the hang-up icon).

### **Scenario 4: Hangouts on Air**

1. Explain the idea of Hangouts on Air (very broadly); describe usage scenario.
2. Have the user log in to Google+, then ask them to start a Hangout on Air.
3. Once user starts the Hangout on Air (or after you tell them how to do it), ask them to end it.
4. Ask user what the status of the hangout is after they end it (i.e. what happens when they see the Hangout ended). Ask the user how they would post the Hangout to their Stream.
5. Ask the user to edit the Hangout video.
6. (See if user figures out that the hangout is automatically posted to the Stream, but don't tell them if they don't figure it out. If they do, see how they react.)

## Appendix D: Background Information Questionnaire

### Background Info

Before we begin the evaluation session, we'd like to ask you a few questions.

**\* Required**

1. **How old are you? \***
  - Under 18
  - 18 to 25
  - 26 to 35
  - 36 to 45
  - Over 45
2. **What is your gender? \***
  - Male
  - Female
  - Other
3. **What is your occupation? \***
4. **Have you ever used Google+ before? \***
  - Yes
  - No
5. **Have you ever used any social media websites other than Google+? \***

Please check all that apply.

  - Facebook
  - Twitter
  - Tumblr
  - Flickr
  - LinkedIn
  - Myspace
  - YouTube
  - Other:
6. **Have you ever used any video conferencing or video calling software? \***

Please check all that apply.

  - Skype
  - FaceTime
  - WebEx
  - CU-SeeMe
  - Other:
7. **Your evaluator will give you a code to enter here. \***

Thank you!

After you submit your responses, we can begin the evaluation session.

## Appendix E: Post-Test Questionnaire

### Post-Test Questionnaire

For each of these statements, please rate how much you agree or disagree, from 1 (Strongly disagree) to 5 (Strongly agree). If you are unsure, or have no particular opinion, about a statement, please select 3 (Neutral).

\* Required

Overall, I am satisfied with how easy it is to use Google+. \*

1 2 3 4 5

It was simple to use Google+. \*

1 2 3 4 5

I feel comfortable using Google+. \*

1 2 3 4 5

Whenever I make a mistake using Google+, I recover easily and quickly. \*

1 2 3 4 5

The interface of Google+ is pleasant. \*

1 2 3 4 5

Google+ has all the functions and capabilities I expect it to have. \*

(This statement is referring to those parts of Google+ that you used during the test.)

1 2 3 4 5

I found Google+ unnecessarily complex. \*

1 2 3 4 5

I think that I would need the support of a technical person to use Google+. \*

1 2 3 4 5

I found the various parts of Google+ that I used to be well-integrated. \*

1 2 3 4 5

I thought there was too much inconsistency in the interface. \*

1 2 3 4 5

It was easy to tell what parts of the interface do just by looking at them. \*

1 2 3 4 5

I felt confident that I could easily figure out how to do what I wanted to do with Google+. \*

1 2 3 4 5

I would imagine that most people would learn to use Google+ very quickly. \*

1 2 3 4 5

I think that I would like to use Google+ frequently. \*

1 2 3 4 5

Your evaluator will give you a code to enter here. \*

**Thank you!**

We appreciate your participation.

## Appendix F: Participant Quotes

Participant quotes are in **blue**. Facilitator prompts and notes are in **grey**.

### **Selected comments on the Stream (home page)**

#### Layout:

- It's a little... jumbled (*the multi-column layout*)
- I'd look further [for a way to change layout] if I really, really wanted to, but nothing jumps out at me
- (*after finding how to change the layout*) Oh, there's this "More" button... that's kind of a silly place to put it
- It is confusing. (*Stream layout*)
- (*Do you think there is a way to put into another layout?*) Yes, but not sure where.
- User asked why posts are in two column? is it ordered by my post and other users posts? but he don't understand why its in two column

#### +1 feature:

- ... this +1 button, I assume that's the 'like'... largely because of Google's media advertising.
- (*How would you like the photo?*) +1? Not too sure? A little confusing for how the +1 button works

#### Posts in Stream:

- That seems to be somewhat inconsistent... (*presence of "View post activity..." in Options menu of posts with comments, but not posts without comments*)
- I think it's interesting that Google just decides that you want to look at stuff... (*referring to posts inserted into user's Stream from What's Hot*)
- User expected to see the name of who gave them +1, when he was able to gave himself +1 he found it unexpected.

#### Post order:



- That's [a post on the Stream] at the top, so I'd expect it to be the most recent...
- In order to figure out what was the most recent post, I'd have to look at all of them
- *(Can you tell if the posts are in a specific order?)* Looks like just Random things are posted
- *(What order is the home stream in? Can you tell?)* I am not sure it is very confusing, I am not sure what I am looking at
- *(Where would you go to share a post?)* I don't know

#### Making posts:

- ... if I were actually trying to figure out what they [icons beneath image in Share Photo screen] do, I would hover over them to see what they do.
- I have no idea why it [the trash icon in the picture post window] would be there.
- *(Where would you go to post a picture?)* Probably go to more? Home?
- *(About changing audience to a post)* This can't be that tough.
- That seems to be somewhat inconsistent... *(presence of "View post activity..." in Options menu of posts with comments, but not posts without comments)*
- Reply looks like a new comment

#### **Selected comments on Google Hangouts**

##### Mute/unmute:

- *(How would you unmute a user?)* Probably going through the same... uh... that seems like it would work... ... I'm actually kind of befuddled here.
- *(How would you mute a user? then How do you unmute?)* microphone on top? I think I just click again to un-mute. Oh wait maybe I have to un-mute at the top of the page? That is strange I am able to un-mute. I should be able to do both. Both of us should be able to un-mute or mute if we select mute.
- I should be able to unmute him but I can't. It's actually greyed out. It's not supposed to be.
- I think if i mute someone, I should be able to un-mute him

##### Other:

- *(Asked how you would see who is in a text Hangout with you)* I would start clicking on random buttons until one of them told me this information.
- *(Do you expect any prompts before video mode comes up from chat?)* Yes, I would expect a prompt before the video mode comes up

## **Selected comments on Hangouts on Air**

### Starting the Hangout on Air:

- *(Can you start a hangout on air?) (After selecting Public)* It won't let me, there is an error prompt.
- *(Asked how you would start a Hangout on Air)* [My] first instinct is to click on all the buttons.

### Editing the video:

- *(Asked how you would edit a posted Hangout on Air)* I would start by assuming that I can't! Then I would click this "Edit Post". Then... I don't even know. Then I would continue to assume that I can't, and then I would go back to what I was doing.
- *(Asked "how would you edit the video"?)* It seemed to connect through YouTube, so I'd probably go to YouTube... which means going to another website...
- What I would do is, probably... use this [the G+ Stream post with the video] to go to the YouTube page for it, and there'd probably be some editing capabilities exposed there.
- *(Do you think editing from Youtube is intuitive?)* No, I would expect it to be a one stop thing in Google+.

### Broadcast status:

- *(Do you think you are on air right now?)* Yeah, oh wait I guess I need to start the broadcast.

### Other:

- *(Where do you think your hangout on Air went and did it record)* Yeah, it recorded. Not sure where it went, expect it to be at the top of the stream. (After about 3 minutes) Finally posted on stream but expected it to be more instant, not an issue to me though.

- *(What window would you expect to edit the post from?)* I would expect to edit from my home profile

### **Selected general quotes**

- How could Google create such an interface??