

# TIPPER

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## Prototype & Evaluation

### Process

Our design attempts to address the broad design question, *How can we give seniors clear, reliable, contextual help for web tasks they are unfamiliar with or have forgotten?* After defining and iterating to increasingly specific design requirements, ideating solutions, and narrowing in on the most viable design, we developed low and high-fidelity prototypes to test our assumptions and product concept.

The Tipper system provides both general descriptive annotations to functions on web sites and step-by-step tutorials to senior users. Tips can be “personal tips” created by family members or helpers (or served persona) or the elderly users themselves and saved locally on the user’s computer, or they can be “crowdsourced tips” contributed by people all around the world.

We adopted paper prototyping for rapid, low-fidelity prototyping for informal testing and later used Axure to build a high-fidelity software prototype that we tested with users in our target user group.

### Scope

While the complete design of Tipper requires a number of parts, such as creating, editing, and moderating tips, our prototype **focuses only on consuming tips previously created**. Using existing tips is by far the most important function for our two primary personas. Further design, prototyping, and testing will be needed for features necessary for the design but more relevant to our served persona, the helpers of the senior users, than our primary personas, the elderly users themselves.

Within this scope, we created high-fidelity prototypes for three Tipper feature concepts:

1. Crowdsourced tips
2. Personal tips
3. Step-by-step tips

Additionally, we tested three variations on particular aspects of the design

1. The visibility of highlighted outlines
  - a. “All highlights”: Show highlighted outlines all the time
  - b. “Top 5”: Show the top 5 most-used functions highlighted all the time

- c. “Minimal”: Only show highlighted functions on mouseover
2. Dismiss behavior of tips
  - a. “Momentary”: Hide tips on mouse out
  - b. “Sticky”: Hide tips only after another tip is opened or if user clicks somewhere else
3. Box animation
  - a. Animate the tips in and out
  - b. Do not animate the tips

To further scope the work down for the high-fidelity prototype, we chose to show Tipper working with Google Chrome, the most common web browser used by our primary personas. The final design aims to work cross browser.

## Crowdsourced Tips

Our high-fidelity prototype aimed to test two designs for crowdsourced tips.

**“All highlights” version:** In this design, all functions with available tips are always visible on the page with orange highlighted outlines.

- *Advantage:* Available tips are clearly and explicitly manifest; users know exactly which functions have tips and will not miss them.
- *Disadvantage:* Seeing many orange boxes, especially on pages with lots of available tips, may be overwhelming to users.

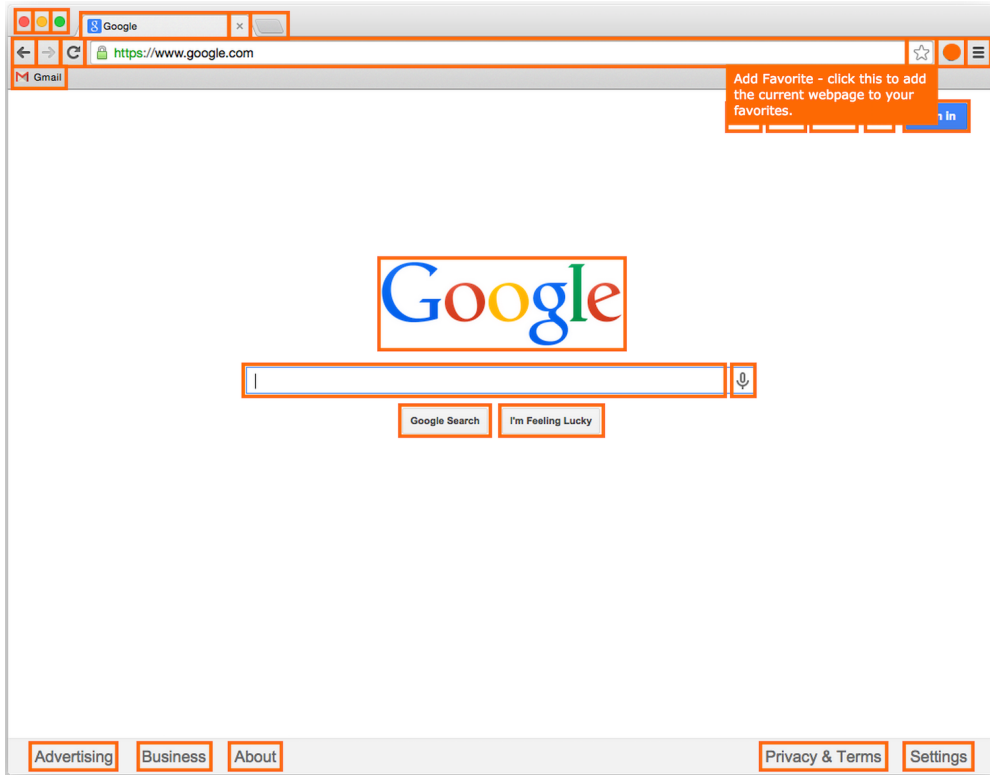
**“Top 5” version:** This design addresses the disadvantage of the previous design by showing orange highlighted outlines on only the top 5 functions on the page, according to the frequency of clicks of all Tipper users. This is a simplified variation of the “heatmap” concept, that we wanted to evaluate before exploring more complex heatmap options.

- *Advantage:* Only a limited number of boxes every appear all the time on the screen, and users’ attention is directed toward the most popular functions.
- *Disadvantage:* Users may not realize that relevant functions have tips associated with them and miss those tips.

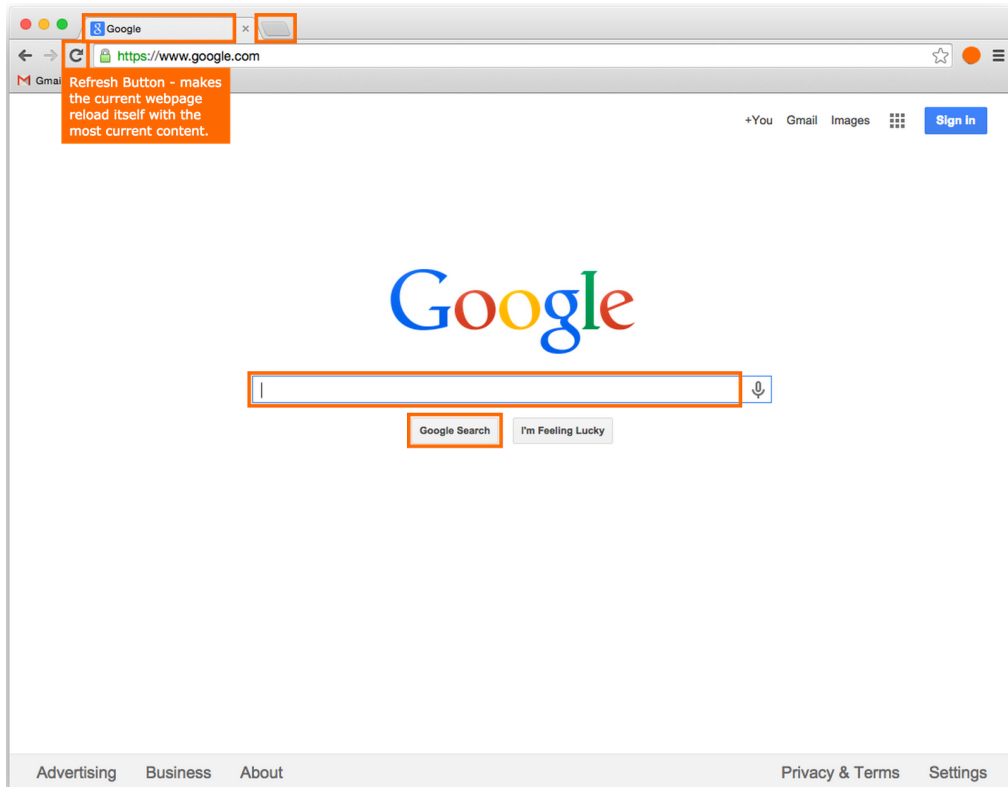
Both prototypes contain the same number of tips, and in either case, the tip and orange box will appear when the user mouses over that region.

Crowdsourced tips serve all three of our personas. Helen “Hesitant” uses the tips to understand and become comfortable with items on screen before she clicks them. Larry “Learner” uses the tips to explore new functions. The Top 5 design potentially gives him recommendations for new features to learn. Also, it saves Gary “Guru” time teaching the elderly users.

## Crowdsourced tips prototype - Normal design



## Crowdsourced tips prototype - Top 5 design



## Personal Tips

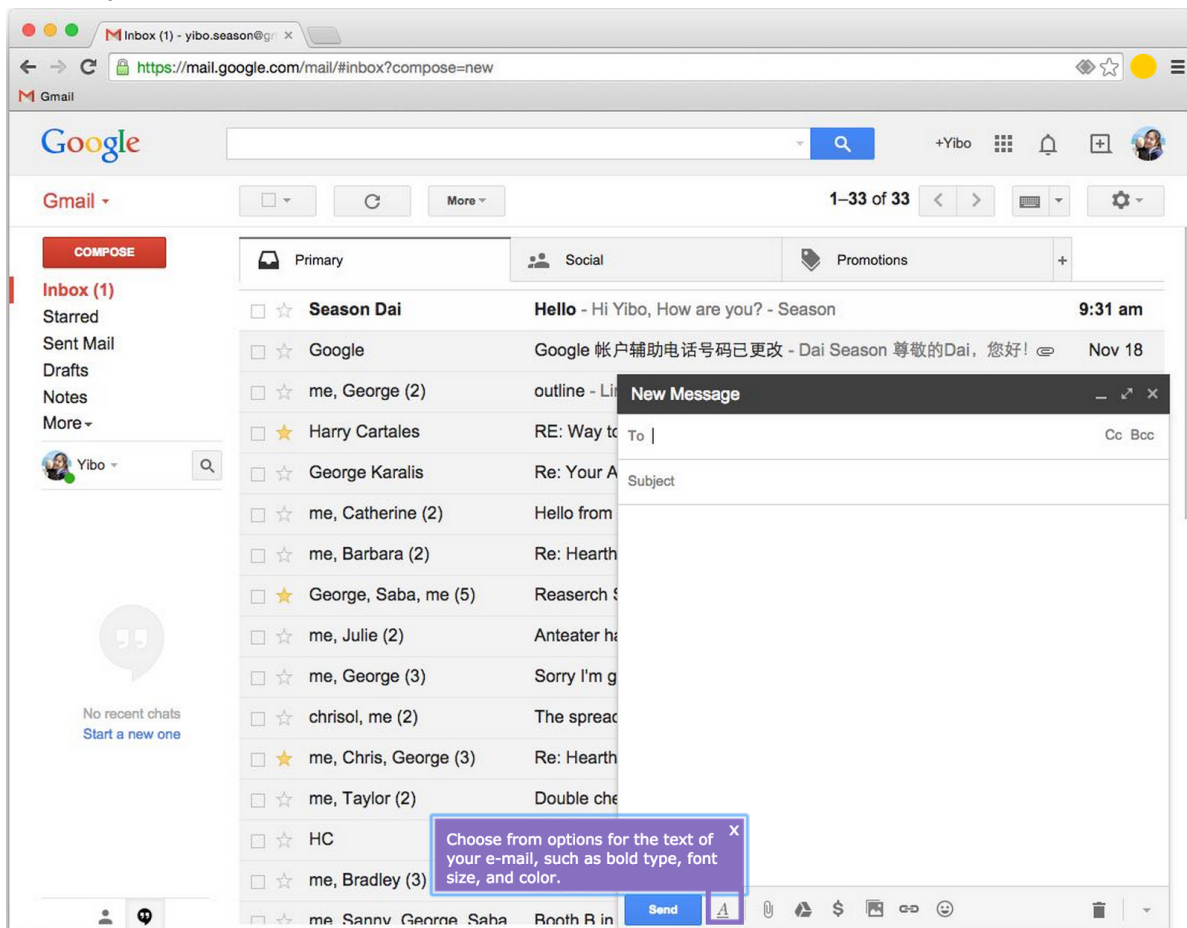
With personal tips, tips are created by someone our user knows and appear only on the user's local computer. Our prototype tested two variations for when local tip boxes appear.

**“Normal” version:** highlighted outlines appear for personal tips all the time, when Tipper is enabled.

**“Minimal” version:** highlighted outlines only appear when the user mouses over the tip, when Tipper is enabled.

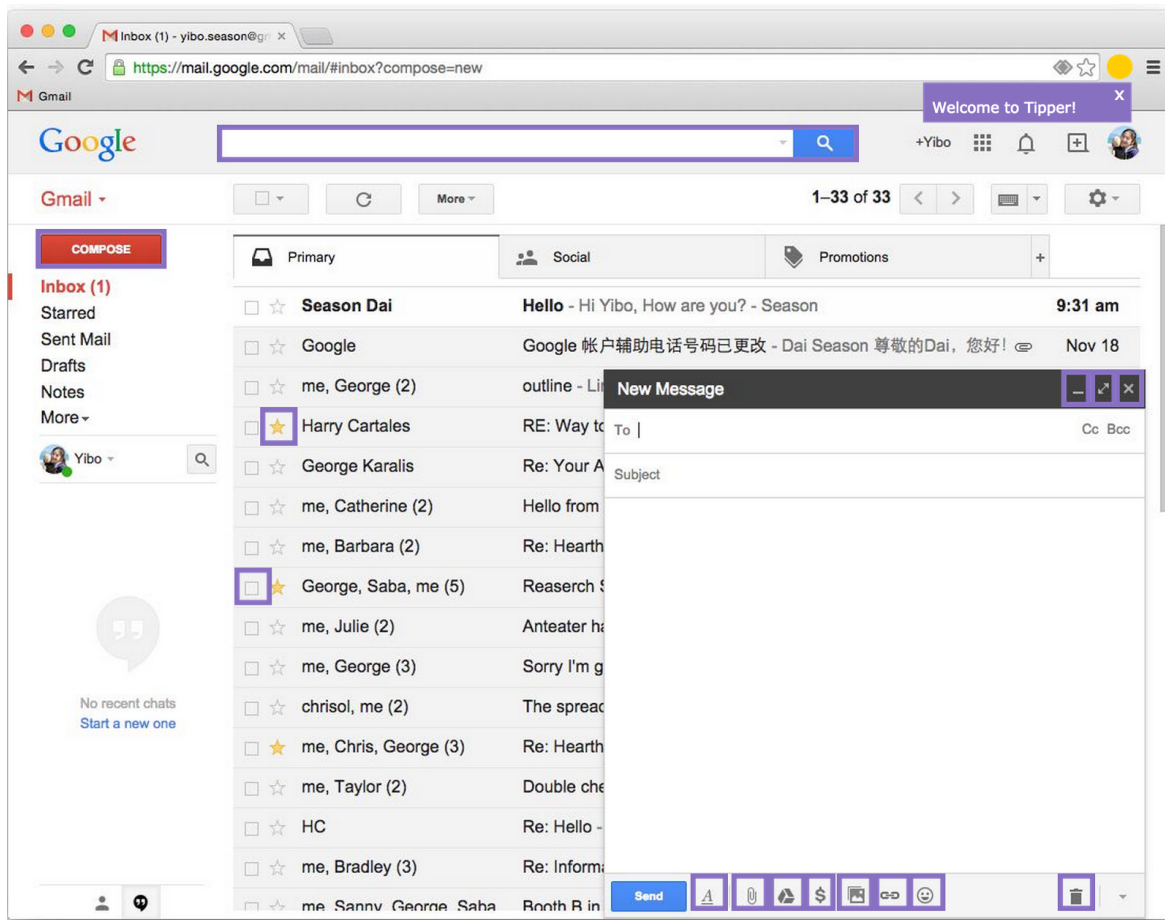
Personal tips serve all three personas. Gary would create personal tips for Helen and Larry. The tips are tailored to Helen and Larry's understandings and needs. They can accomplish a task either they know but perhaps forget how to do. In this way, Gary don't need to reteach the same concepts over and over. Also, Helen and Larry are not afraid of their notes written on physical paper getting lost anymore.

### Personal tips - Minimal





## Personal tips - Normal

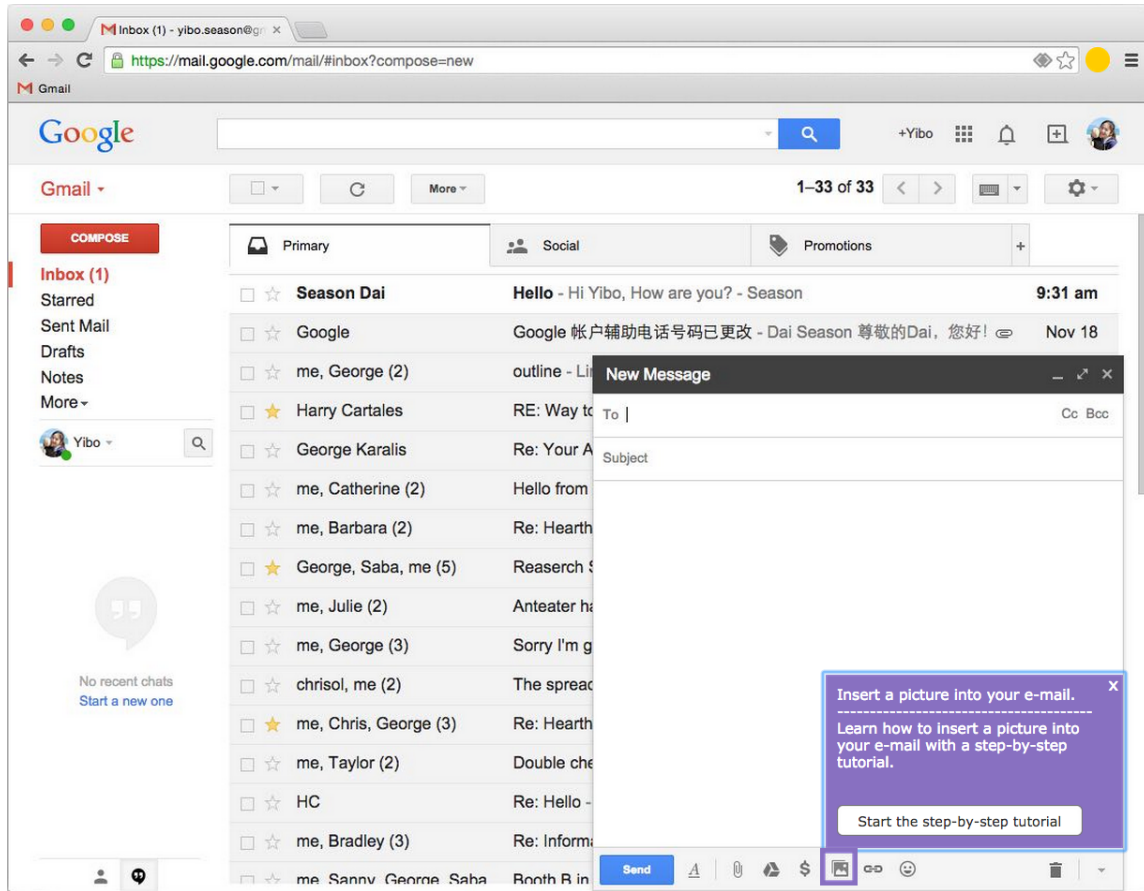


## Step-by-Step Tips

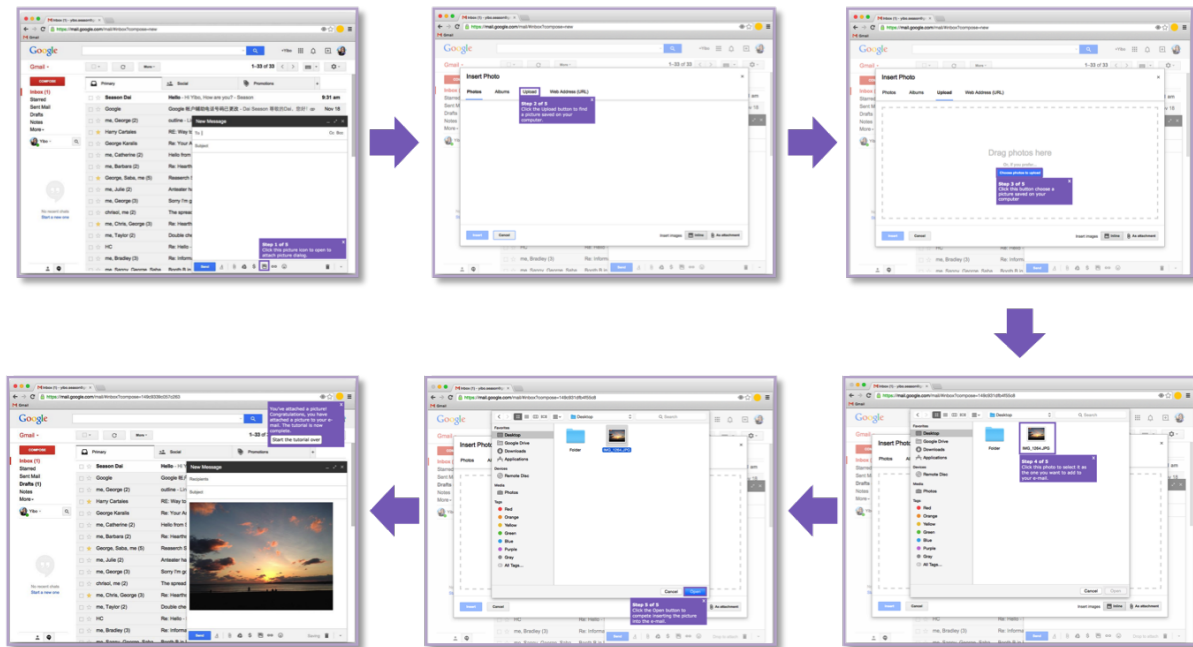
In addition to the tips that simply provide descriptions to on-screen items, another important feature is step-by-step tips. Step-by-step tips present a sequence of tips, each tip leading to the next to complete a multi-step task. In this prototype, we created a step-by-step tip to guide users through the process of inserting a picture into a Gmail message.

When the user mouses over a function with an associated step-by-step tip, a button within the tip allows users to enter the step-by-step tutorial. If they choose to follow the step-by-step tip, users are guided through the process where the next step of the task is always visible with a purple box and annotation.

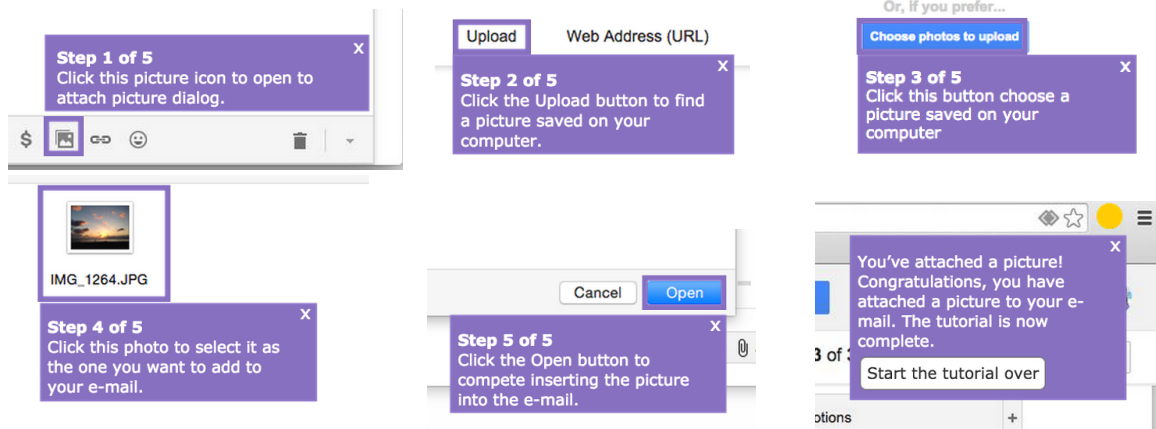
## Step-by-step tip - Beginning tip



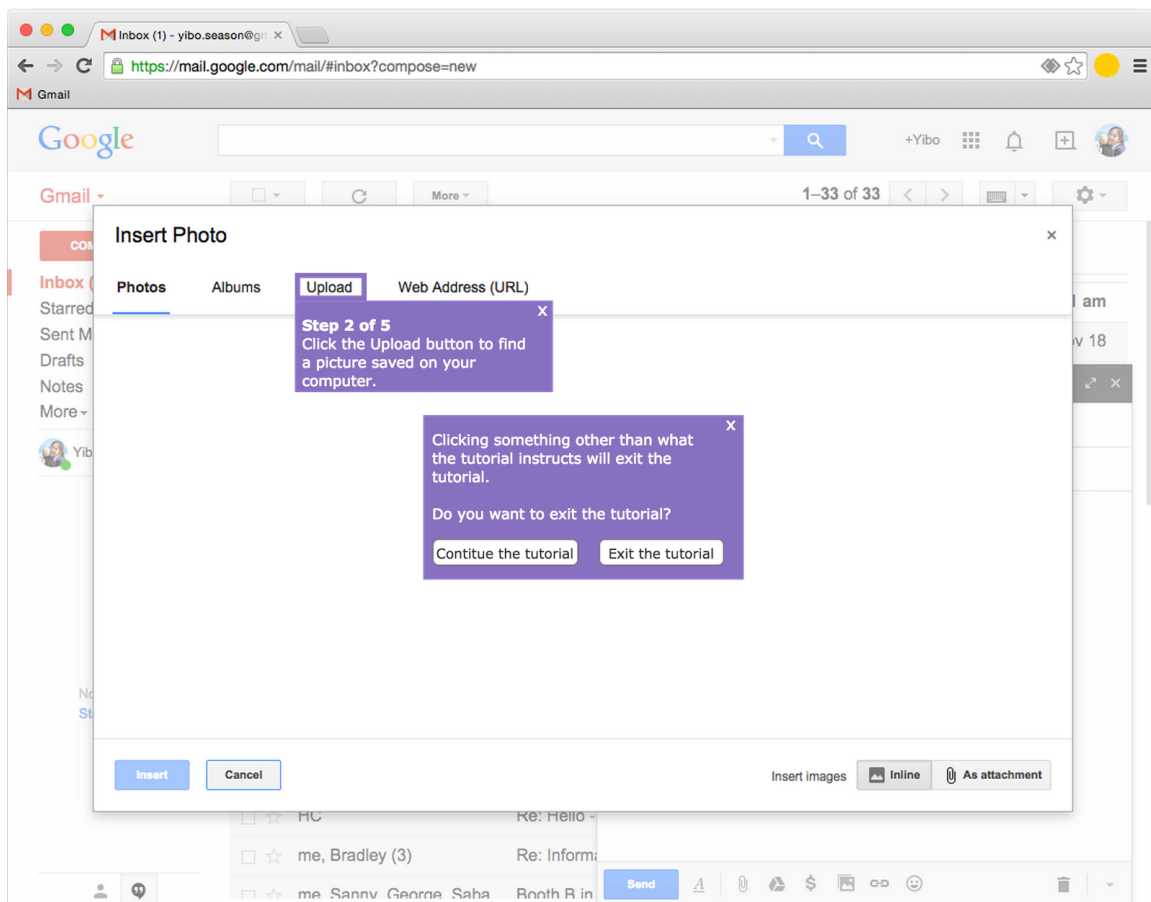
## Step-by-step tip - Process diagram



## Step-by-step tip: All steps



Users can exit step-by-step tips by either turning off Tipper by clicking icon on top right corner, or by clicking somewhere on the page other than the target button. The second scenario is based on our observations that our target users tend to click outside of dialogs to dismiss them. However, to avoid accidentally exiting the step-by-step tutorial, we open a modal dialog confirming that the user wants to exit, before ending the tutorial.



# Justification

## Prototyping Techniques

We started with horizontal prototypes on paper to prototype a broad series of interactions. During the process, we refined design and UI requirements, evaluated alternatives, and scoped the design. We were able to evaluate and adjust the design several times before investing in a high-fidelity prototype. We decided on three main feature concepts: crowdsourced tips, personal tips and step-by-step tips.

We then delved into each scenario and created two high-fidelity prototypes for each in Axure. Axure supports animation, page jumps, mouse on and out events and logic necessary to simulate most of the interactions of our scenarios. By providing design variations among the four prototypes, we tested different options such as animation, color, tip visibility, and so forth.

## Visual Design Choices & Color Scheme

Our research suggested that color would be important for calling attention to tips that our users could potentially miss, so our color palette aims to highlight elements.

### Justification for Orange Crowdsourced Tips

- Used relatively infrequently on the web
- Commands attention without being overpowering or in-your-face
- Warm color that is potentially inviting and friendly
- Accessible to color blind users
- Commonly associated with optimism, determination, and movement, which are appropriate for our crowdsourcing concept

### Justification for Purple Personal Tips

- Clearly distinguished from the orange crowdsourced tips
- Used relatively infrequently on the web
- Purple is more associated with trust, better for the personal tips
- Commonly associated with imagination, creativity, dignity, nobility, abundance

### Justification for Font

- Font size 13, larger than typical web content to benefit legibility
- Verdana typeface is web compatible and sans-serif is clear to read on screens

# Evaluation

## Objectives

These four prototypes together support testing the following aspects of our design:

- Effectiveness of tips
  - Evaluate simplicity of tip interaction
  - Evaluate text length and wording of tips

- Visibility and legibility of graphics and tips
  - Evaluate user preference for color, font, and sizing
- Animation effects
  - Evaluate user preference for animated versus static interactions
- Test dismiss behavior of tips
  - Evaluate user preference for tips that disappear immediately after mousing out or stay until the next interaction
- Effectiveness of step-by-step tips with the pre-set task of 'Insert a Picture'
- Additional usability issues
  - Allow users to freely interact with the prototype to reveal additional issues

## Usability Testing Plan

### Participants

We tested our high-fidelity prototype with 5 participants, all of whom match our primary personas: age 70 and older with some internet experience. 3 participants are female; 2 are male.

#### **3 participants fit the Helen “Hesitant” persona**

The Helen primary persona represents 60% of our target user group. These users have some experience with the web but are hesitant to try things they are unfamiliar with.

#### **2 participants fit the Larry “Learner” persona**

The Larry primary persona represent 40% or our target user group. These users are willing to learn and try new things, but often need assistance.

#### Familiarity with the tasks in our prototype

- All use Google search, though none were familiar with all of the functions on the Google search page
- All use Gmail, though none knew how to insert a photo into a Gmail message

### Crowd-sourced Tips

#### **Normal Prototype**

Warm-up session: Introduce the system.

“There are tips other people left here. You can click the Tipper button (show them) to activate this system. Please think aloud.”

#### Usability Testing Tasks:

- Compare users’ understandings of *add bookmark*, *grid icon* and *refresh* before and after launching Tipper
- Launch Tipper
- Let the user explore; field and note any questions
- Turn off Tipper

## Top 5 Prototype

Warm-up session: "All functions on this page have tips on them. You can show them by placing your cursor over the item. Only the Top 5 most popular functions are highlighted with orange boxes. Please think aloud."

Usability Testing Tasks:

- Launch Tipper
- Let the user explore; field and note any questions
- Turn off Tipper

## Stepped Tips

### Warm-up Session

The user is told to help a Gmail user "Yibo" insert a photo into an email. The first screen of the prototype is composing a new email.

### Minimalist Prototype

- Compare users' understandings of *star an email* before and after launching Tipper
- Launch Tipper
- Let the user explore; field and note any questions
- Turn off Tipper

### Normal Prototype

- Launch Tipper
- Enter the step-by-step tip of inserting a picture
- Follow the tutorial to insert the picture
- Turn off Tipper

## Techniques

- Think-aloud
- Critical incidents
- Post-questionnaire

## Data to Collect

- Critical incidents
- Post questionnaire
  - Task easiness (rate each task from 1 very easy - 5 very difficult)
  - Usefulness of the tips (1 very useful - 5 very useless)
  - Understanding of the Tipper system (1 very clear - 5 very unclear)
  - Legibility of the tips (1 read easily - 5 unable to read them)
  - Color preference (purple vs. orange)
  - Outline visibility preference (everything, top 5, minimal)
  - Tip dismiss preference (momentary vs. sticky)
  - Top animation preference (animation vs. no animation)

- If you could add your own tips for yourself or others, would you do that?
- If this were a real product, would you use it? (Definitely - No way)
- Do you have any suggestions or changes for Tipper?

## Findings

### Positive Findings

We received very positive usability testing results.

- Our users felt that Tipper solved the largest problem they faced using Internet, finding clear help in the context of what they are trying to achieve. They could also learn at their own pace, as opposed to that of a helper who may go too fast.
- Our participants were very excited about what they learned by using Tipper. For example, one user learned how to search Google for images, and she was so excited to see elephant images appear on the page.
- Users easily understood how and when to turn Tipper on and off.
- Several users noted that Tipper could replace notes they write down on paper, because paper notes might get lost whereas Tipper tips would not.
- Tipper greatly helped users understand features they did not previously, as the table below shows.

Function	Before	with Tipper
Add Favorite	0	5
Google Apps Menu	0	5
Refresh button	1	5
Star an email	1	4
Insert a picture into an email	1	5

### Critical Incidents

We observed some areas where our design breaks down.

- Some boxes were missed by users because they blended in with the web page. All 5 users could not find the highlighted box at step 3 of 5 at the first time because the purple highlighted outline has a similar color with the blue button.
- Some tip text was still confusing to them, for example the “+You” Google+ function.
- The interaction of “mouse on to show animation” and “mouse out to dismiss annotation” was not stable. Users tried several times to make the annotation appear again after they had disappeared.

## Observations & Post Questionnaire

**Ratings:** We got highly consistent responses in post questionnaires:

- 4 out of 5 seniors rated the easiness of all tasks at 1 (very easy), except 1 user who rated step-by-step tips at 2.
- All seniors rated the usefulness of tips, understanding of the Tipper system and legibility of tips at 1 (very useful/clear/legible).

**Color preference:** 4 of them said they do not have a special interest in it. However, 4 mentioned independently that they would like to choose the color of personal tips for themselves. 1 user preferred purple, but thought orange might be more recognizable for most people.

**Preference of Everything/Top 5/Minimal:**

- 3 seniors preferred the top 5 version; 1 user preferred all highlighted outline version; 1 user didn't have any preference.
- We additionally observed that the top 5 version helped direct users' attention to important features, as opposed to everything which encouraged some users to go through each tip one by one.

**Box interaction:**

- All 5 users like animation effect
- However, we noticed that some of them didn't notice that the personal tips prototypes didn't have animation. 4 of 5 users like the sticky effect while the other 1 like momentary. However, we noticed that interactions are more stable with the sticky effect.

**Willingness to create tips:**

- 4 would add tips for themselves
- 1 additionally said he would add tips for others
- 1 user would not do either

**Willingness to use Tipper:** All 5 users responded "Definitely."

One user commented: "[Tipper] is the missing thing for us. I'm very tentative to screw something up. It would be very helpful for me."

**Suggestions for Tipper:**

- One user hoped to be able to hide some of the boxes as she got familiar with those functions
- All 5 users suggested they want it not only to test, but as **a real product!**

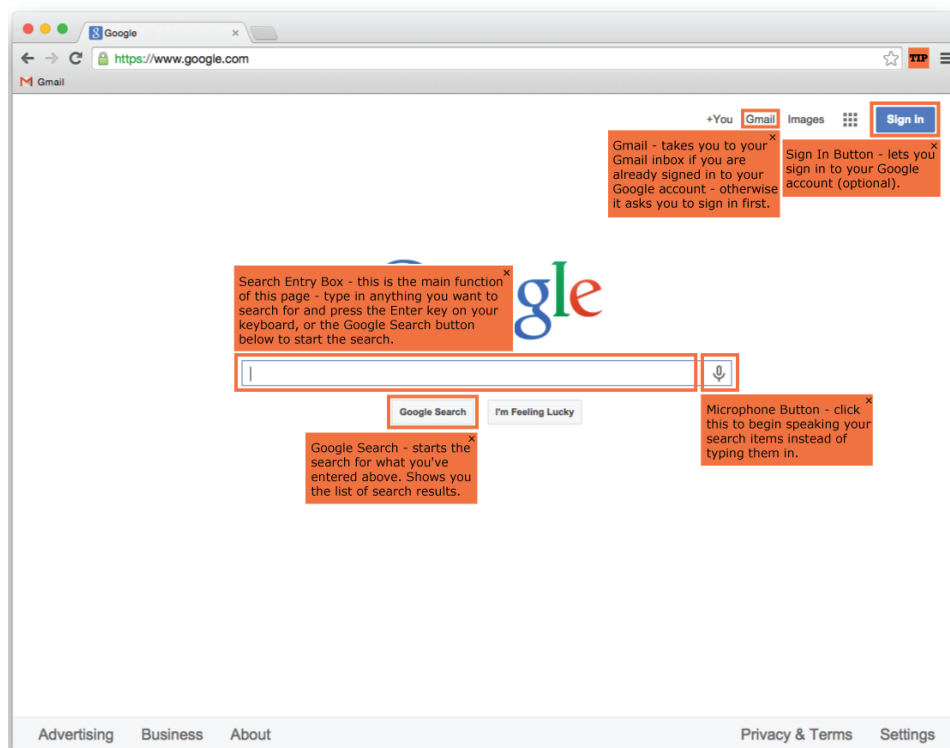


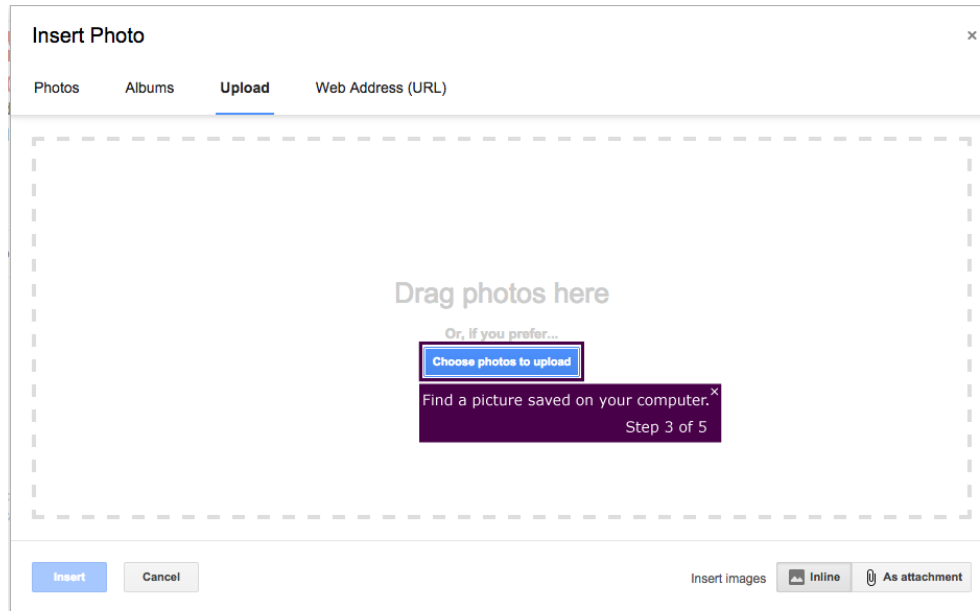
# Changes to Prototype

## Changes Implemented

Based on our findings, we were able to implement several changes to our prototype immediately.

1. The Tipper icon and boxes subtly animate to draw attention and distinguish them from web page content (JavaScript prototype)
2. Tips always animate in to draw attention to the tip (Axure prototype)
3. Tips stay open until the user mouses over the next tip, so users can more easily select tips with smaller targets (Axure prototype)
4. Tips and boxes include a white border to clearly distinguish them from web elements of similar colors (Illustrator prototype)
5. Color accessibility: In addition to choosing color blind safe colors, we chose background/text color combinations that meet the W3C Web Accessibility standards color contrast ratios at the AAA level (Axure and Illustrator prototypes)
  - a. Ratio **15.3:1** for purple (#480048) background with white (#FFFFFF) text
  - b. Ratio **7.9:1** for orange (#F07241) background with black (#000000) text





## Future Changes

We identified some more substantial areas of change, that we would invest in for future prototypes.

1. Step-by-step tips use animation to transition between steps. Based on testing, we may consider dimming parts of the page not relevant to the task to further call attention to the tip.
2. Users can easily create tips for themselves
3. Users have a way to hide boxes/tips for functions they already know
4. Users have a way to upvote and flag tips they find helpful or unhelpful, unclear, or inappropriate.
5. Allow users to customize the colors of personal tips
6. Tips that have been verified by developers or other users indicate that they are “trustworthy” to make users confident in the content

## Conclusion

We are very pleased with the findings from our prototype evaluation of Tipper. We are encouraged by the feedback and that our direction is sound. We will continue to refine the design and hope to one-day make Tipper a reality.