

Assignment 2: Technology Shopping Assistant

## Part 2: Design Briefing

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# 1. INTRODUCTION

## 1.1 Motivation from needs and requirements

As the needs and requirements mentioned in Part 1, users not only have the requirements of basic functions, like filter products, provide updated product info, compare different models and so on, but also have specific needs, as **visualize products' data, provide buying suggestions of different types of laptops, compare the prices of one model in several shopping platforms, show one model's history prices, conclude and show useful reviews, and can ask for friends' suggestions from social networks.**

From the data I collected in questionnaires and interviews, about 75% thought that nowadays most shopping platforms only use numbers in specifications to combine laptops is not intuitive and not easy to get the feeling of how fast the laptop is, how big the hard drive size is, etc. So, in my brief designing, I compare several ways to visualize the products' data serving for comparison.

Besides that, 70% had to search the information of the laptop at first and then they can know which model they want. Thus, integrating rankings, according to the existing rankings from Cnet.com, Zol.com.cn, Engadget.com, is a good way help users find their aim type of laptops and provide buying advice to help them save time on model-finding process.

More than 90% respondents mentioned that they couldn't find a good way to compare prices through different shopping platforms, like comparing the price in Amazon.com, Bestbuy.com, eBay.com and manufactures' websites at the same time in the same page. This requirement reflects that users not only want to compare the products in one shopping platform, but also want to compare same product across different platforms.

Nearly 80% respondents showed their willing to know the history price of one product. Because the price of laptop may change everyday, they want to find and check that whether they buy it at the most valuable time.

For the needs of product reviews, almost everyone wanted that their aim product had enough reviews, and all my interviewees expressed their feelings about useful and useless reviews. They also gave me the point that they want to save time on reading reviews.

The final special requirement is about getting buying suggestions from friends. Sometimes, they need to make a phone call to their friends to ask for advice. Well, in order to let more friends know his/her needs and can discuss the product on social network.

Based on those basic and specific needs, combining the design principles we learnt from the readings, my initial design is motivated by those needs and requirements.

## 1.2 Design principles review

From all the readings we have learnt, the following design principles are used in my

design:

- From Norman's book, the design principles of Making Visible, Affordances, Feedback, Mappings, Constrains, etc. compose the basis of webpage design.
- Based on the data gathering from Part 1, needs and requirements, here I find user's conceptual model, which represents what users are likely to think and how user likely to respond to my design.
- Macro/micro reading can help users to get the whole picture or the details of a product. Hypertext will connect different pages and compose the structure of all the pages. The main sensemaking task of this design is helping users to find the aim laptop they want by representation and encoding metadata.
- Layering and Separation is a good tool to show the comparison and differences between products.
- There are so many products' data in this shopping assistant. How Information Visualization helps users to amplify the cognition of products' comparison and how to accomplish the mappings works from the raw data to final view will be introduced in this report.
- According to Color Theory, the choice of different colors used in the pages design will affect a great deal in providing a convenient feeling when a user using my shopping assistant.
- Annotation and Reflection will also be considered to help users track their products' comparison process and help them to make the final decision.

### 1.3 Sensemaking tasks

Sensemaking is the process of searching for a representation and encoding data in that representation to answer task-specific questions. When using the shopping assistant, the main task-specific questions are how can I find a laptop that I need, how can I compare several laptops that I'm interested, how can I know that I buy the laptop at the most valuable time with a good price.

i) How can I find a laptop that I need?

To answer this question, my design should integrate professionals' advice and user's friends' suggestions to help user clarify their needs. If users know the brand, type or other features of their needed laptops, they can filter the results step by step.

ii) How can I compare several laptops that I'm interested?

This design should have the function of comparing list, which enable users to add the products into this list and distinguish the differences clearly.

iii) How can I know that I buy the laptop at the most valuable time with a good price?  
Price is always the key feature that users care the most. This design should support providing the prices from several shopping platforms, and show the history prices of one product.

## 2. CONCEPTUALIZE RELATIONSHIPS AMONG SEMANTIC FEATURES

This process is used to analyze the semantic features mainly in the interviewee's responses to dig out their thoughts and experience during shopping and conceptualize them to learnt design principles.

### 2.1 Semantic features

I bought my laptop in Amazon. It is a big shopping website, so I think the products it sells are reliable. It has a blank bar with "Go" to tell me I can search things here. Or I also can use the drop-down menu to navigate to the product that I want. There are so many links in Amazon. Sometimes I even wonder how they can work correctly. When I enter the product page, there are different views of the product. If it let me zoom in to see the details, that would be better. There are amount of reviews at the bottom of the page. I like that, especially they showed some quotes from real users' reviews. But, among most reviews under that, some reviews are pointless and useless to me. To some extent, I also cannot figure out their attitudes to this product. I like the colors that Amazon uses. They are simple and clear. However, there are so many words to describe one product. The one point I think Amazon should improve is that they don't provide any comparison between products. It only gives me recommend products and rankings of their selling. That makes me have to make notes to remember the parameters of the laptops that I'm interested in.



In this paragraph of interviewee's response, we can find key features a shopping assistant should include and we also can get her attitude towards to the interface of Amazon when she bought her laptop.

**Key features:** search bar, drop-downs, links (hyperlinks), product picture, review, ranking, rating, color, product comparison, recommendation, and note

#### Attitudes:

Like	Dislike
Search bar	No zoom in
Drop-downs	Too many useless reviews
Links	Cannot easily figure out other users

	attitudes
Product pictures from different views	Too many words
Quotes of reviews	No product comparison
Simple and clear color	Have to make notes

## 2.2 Conceptualize relationships

According to features mentioned above, and combining some initial design thoughts, I conceptualize the relationships and map them to design principles.

Search bar with a magnifier icon  —> Making visible: this icon can help users to understand that they can search products in the bar.

Links used to navigations between different pages —> Affordances: hyperlinks afford to go to relevant page.

Mouse movement to drop-down menu —> Feedback: it shows the drop-down when mouse moves to it or click it.

Arrows to represent scroll down/up/left/right —> Mappings: map to the direction of the movement.

Zoom in/out of product pictures —> Macro/model reading: can see the whole picture or details of a product.

Use drop-downs instead of linking to new page —> Layering: different menus can be layered in one page.

Show key info and hide useless info, separate contents by white area —> Separation: make uses of the space to distinguish usefulness and functions.

Use earth tone, lower saturation colors, to comfort users, keep consistency in hue, highlight differences in different hues —> Color Theory: the implementation of changing hue, value, and saturation.

Add interactions in social network —> Annotation and Reflection: a place for users to keep their buying “notes” and get responses and suggestions.

## 3. DESIGN SCENARIOS

Based on the interviewees’ shopping scenarios and combining the experience of existing shopping assistants, the design scenario is the process of answering the questions, what’s my users’ needs, can I learn something from existing shopping assistants, which features my design should include or not include, what does my website look like and how to use it, and do my users satisfy my design, do I need to refine it.

My design scenario can be concluded as the following 6 steps.

### 3.1 Review the needs and requirements

According to the responses from the questionnaires and interviews, I define the basic and the specific requirements. As part of one interview shown in Section 2.1, especially the aspects that the respondents are not satisfied with in the existing shopping assistants, should be paid more attention on.

Those aspects are visualize products' data, provide buying suggestions of different types of laptops, compare the prices of one model in several shopping platforms, show one model's history prices, conclude and show useful reviews, can ask for friends' suggestions from social networks, etc.

### 3.2 Summarize pro and cons of existing shopping assistants

The existing shopping assistants to some extent build up the users' conceptual model. They are used to using them. Among the different types of shopping assistants, my respondents use website more than software and add-ons. Thus, the pro and cons are mainly belongs to those shopping websites, like Amazon.com, eBay.com, etc.

#### Pros:

- They all have easy-using and helpful filters to select products.
- A plenty of reviews are under each products.
- Detailed products' info is included.
- Show today's deals and recommend similar or relative products.

#### Cons:

- Need to use notes to compare different models.
- For common users, they have no idea about how fast the processor is, how big the hard drive size is, how good the one he/she choose among other choices.
- Those websites only show the price in their own platform, users cannot compare it with other platforms.
- No way to see the history prices.
- Too many reviews lead to waste time in finding useful reviews.
- Need to write down friends' suggestions when find an aim product.
- Hierarchical structure makes users click and click and click many pages to find the needed product.
- In order to attracting customers staying in one page for more time, so many contents are put in one page.

### 3.3 Decide the key features that this design should satisfy

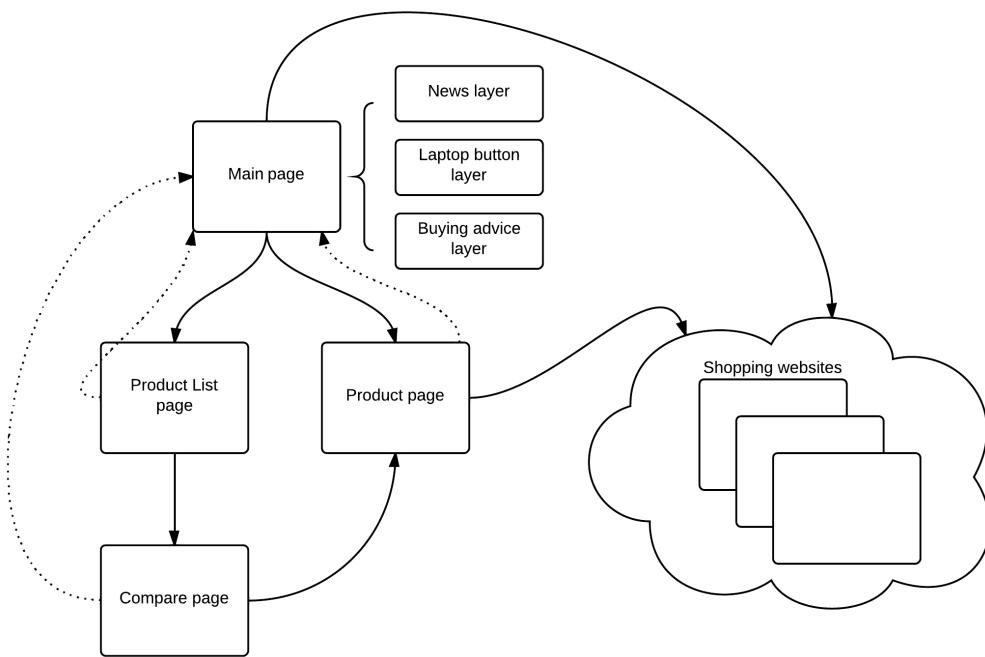
To maximize the satisfaction of users' needs, my design should improve the cons mentioned above as many as possible. While, considering the improvement to some extent will affect other features' performances, I need to keep the balance between

different features and make a wise decision to choose which features my design should satisfy. For example, users don't want to see many content in one page, while they also want the product info as sufficient as possible.

Thus based on the design principles introduced in Norman's book, such as Making Visible, Mappings, Constraints, etc. and the principles in Information Visualization readings help me to make this decision. Also, according to the percentage of my respondents, the selected key features in my design are:

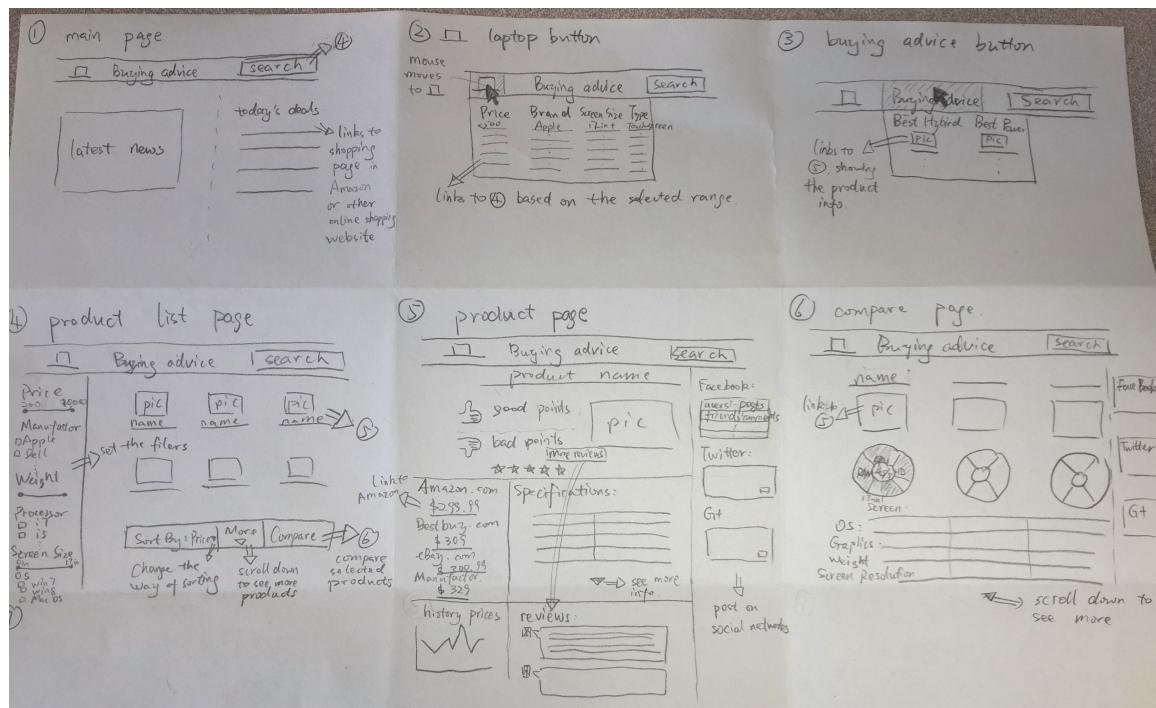
- Filter products
- Show today's deals
- Provide professional advice and friends' suggestion
- Compare laptops' specifications
- Rating system
- Summarize useful reviews
- Prices comparison across shopping platforms and time
- Visualize the key parameters of laptop
- Make some uncommon product info invisible

### 3.4 Clarify the process of using this website



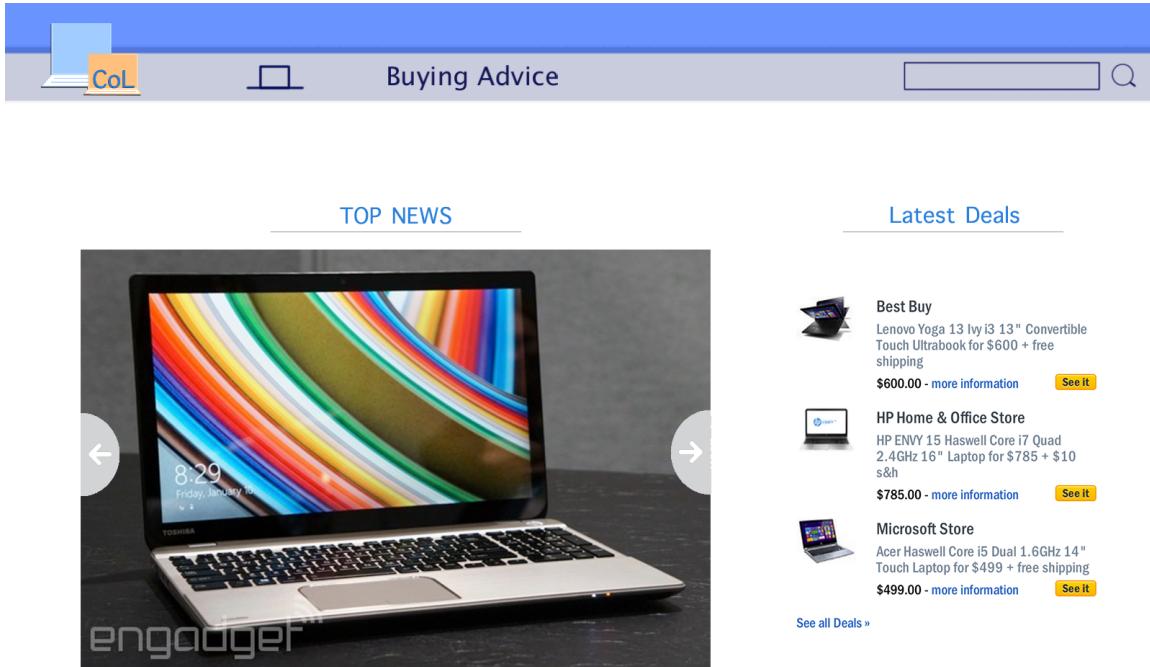
My design includes 4 kinds of pages, as main page, product list page, product page and compare page, their connection structure shown above. As the sketches shown in the photo, in step 1, users can search with the search bar, and see latest news and today's deals. In step 2, when move the mouse to the laptop button, it shows the drop-down menu, which contains ranges in price, brand, screen size and type. Users can click the link to go

the relevant product list page. In step 3, by moving mouse to Buying advice button, it shows the rankings based on several criteria. In step 4, users can filter products and select products for comparison. It also supports different sorting ways. In step 5, product page, it contains the summary of reviews and rating, product's prices in different shopping websites and its history prices, specifications, interactions in social network and zoom-in-zoom-out product picture. In step 6, compare page, users can compare at most 5 products. It provides the data visualization of CPU, Hard Drive Size, Screen Size, and RAM in comparison.



## 3.5 Finish prototype design in Photoshop

### I) Main page



[Toshiba's high-res 3,840 x 2,160 laptop should arrive mid-year](#)

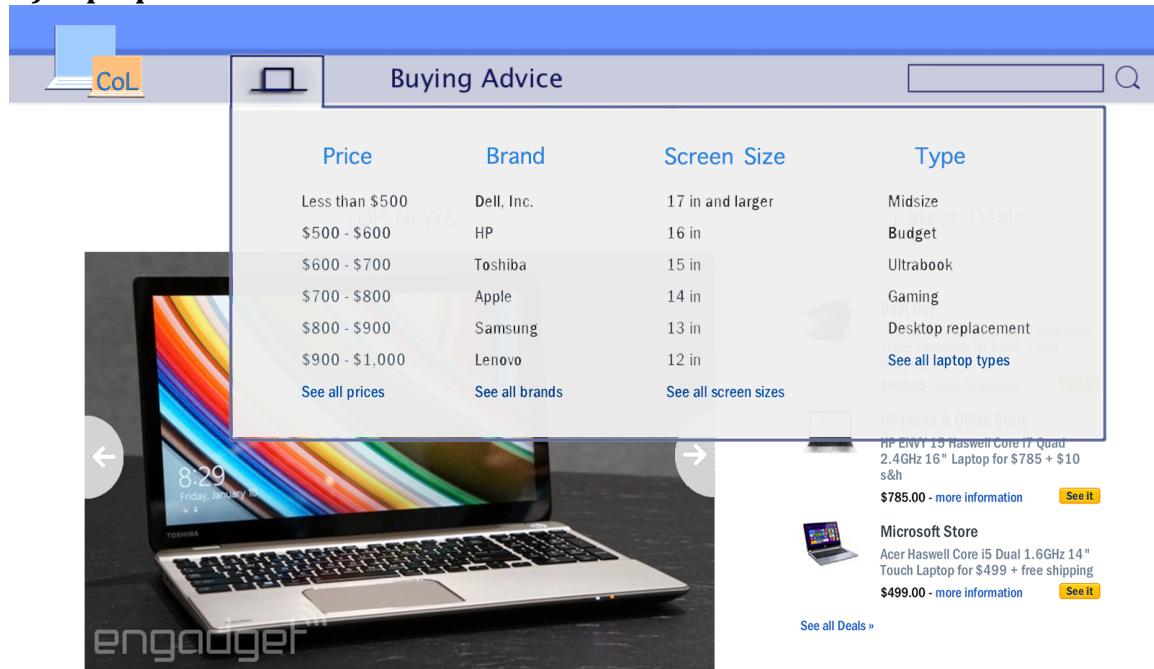
My design of the main page includes the logo, the button, the “Buying Advice” button, a search bar with magnifier icon, top news of laptops and today’s deals.

[Mappings] User can move the mouse to the two buttons to see the drop-down menus. With the left and right arrow, user can see the previous news or the next one.

[Making visible] Give search bar an icon.

What’s more, as users’ needs required, I add today’s deals at the main page.

## II) Laptop button



[Toshiba's high-res 3,840 x 2,160 laptop should arrive mid-year](#)

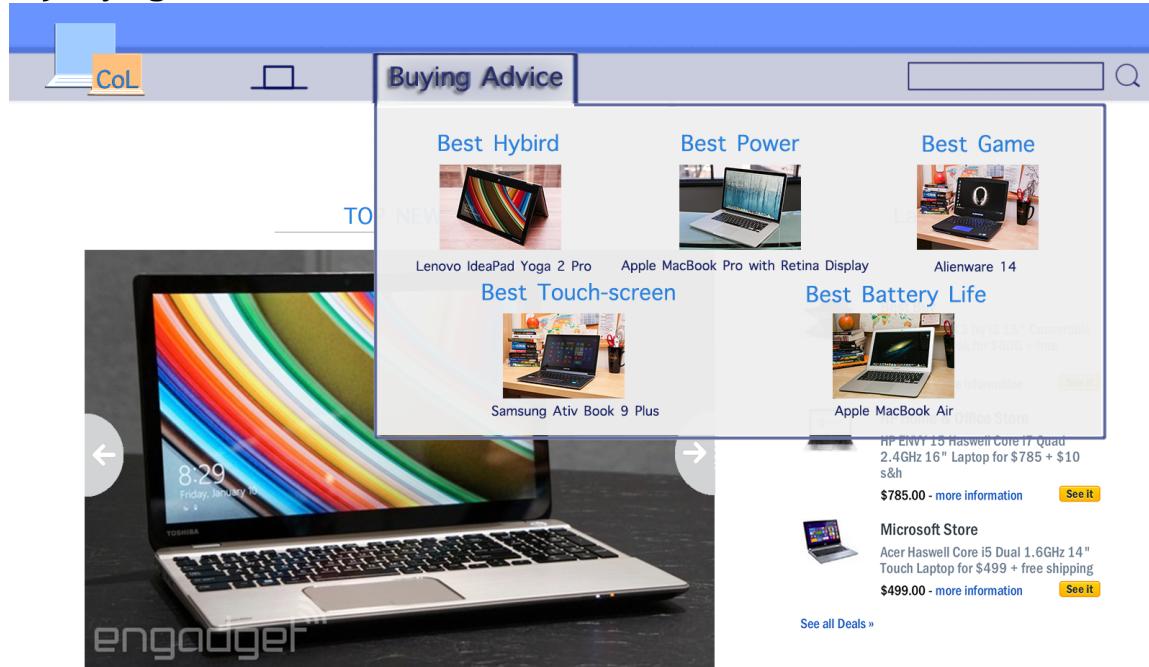
When the mouse is moved to the laptop button, it will shows the drop-down menu and give more specific ranges for users, as price, brand, screen size, and type, which will link to product list page.

[Feedback] Mouse moves to the laptop button or click it, it feedbacks the drop-down.

[Layering] Put the drop-down layer above the news layer.

[Affordances] Laptop button affords click; Links afford navigating to new pages.

### III) Buying advice button



[Toshiba's high-res 3,840 x 2,160 laptop should arrive mid-year](#)

When the mouse is moved to the “Buying Advice” button, it will shows the drop-down menu of five suggested best laptops, which will link to that model in a product-page view.

[Feedback, Layering, Affordances] They are similar with those in laptop button.

## IV) Product list page

The screenshot shows a product list page for laptops. On the left, there is a sidebar with various filtering options:

- Price:** \$0 - \$1870 (radio buttons for Low and High)
- Manufacturer:** Dell, Inc., HP, Toshiba, Apple, Samsung, more (checkboxes)
- Weight:** 0 lbs - 3.5 lbs (radio buttons for Low and High)
- Processor:** Intel Core i5 3rd Generation, Intel Core i7 3rd Generation, more (checkboxes)
- Screen size:** 0 in - 15 in (radio buttons for Low and High)
- Operating system:** Microsoft Windows 7 Pro, Microsoft Windows 8, more (checkboxes)

On the right, there is a grid of eight laptop products, each with a green checkmark indicating it has been selected:

Product	Price
Samsung Chromebook	\$249.00 <b>\$229.99</b>
Apple MacBook Air (NEWEST VERSION)	\$4,099.00 <b>\$1,048.99</b>
ASUS VivoBook Touchscreen Laptop	\$329.00 <b>\$295.98</b>
Acer C720 Chromebook	<b>\$247.99</b>
Google Chromebook Pixel	\$4,099.00 <b>\$1,899.00</b>
HP Chromebook 11	\$279.00 <b>\$279.00</b>
Alienware 14 ALW14-125 Laptop	\$4,099.00 <b>\$1,069.99</b>
Sony VAIO SVD13223CXB	\$1,399.00 <b>\$1,199.95</b>

At the bottom, there are buttons for "Sort By: Review date", "More", and "Compare Selected" (which has a dark green circle icon).

In product list page, users can filter products by changing the parameters at the left side of the page. By checking the product, users can compare selected products, which will open a compare page.

[Making visible] Laptops get a big green checkmark after they are selected; in the “Compare Selected” button, a circle with part of it being dark green means how many comparing rooms users already occupy, for example, in the picture, 2/5 have been used.

[Mappings] The “More” button with a up-side-down triangle maps scrolling down for showing more products.

## V) Product page

**Apple MacBook Pro 15.4-Inch with Retina Display**

My new Macbook Pro 15" Retina display its really fast and gorgeous!

The free copy of Numbers, Pages and keynote are nice too.

The keyboard is firm and comfortable. The trackpad is responsive.

I got the laptop with scratches as it were used.

This is not the newest version it is the oldest in fact don't get this it is a scam and I want all my money back.

The screen is very weak! Mine cracked for no apparent reason.

More Reviews

Amazon.com \$1,899  
Bestbuy.com \$1,949.99  
eBay.com \$1,999  
Apple.com \$1,999

Specifications	
Processors	Intel Core i7 2 GHz
Operating System	Mac OS X Mavericks
Memory	8 GB DDR3L
Hard Drive	256 GB Hard Drive
Graphics Card	Intel Iris Graphics

Reviews

★★★★★ Awesome computer  
By Jeremy Ferguson on October 28, 2013  
Color Name: Silver | Size Name: 256 GB  
This is a wonderful laptop. It's thin and light but feels extremely solid. The retina screen is absolutely gorgeous to look at. The only down side to retina is that many websites don't have high enough resolution images so they end up looking a little blurry. I just

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MacBook Pro 15-inch with Retina Display (late 2013)  
<http://www.engadget.com/2013/10/22/apple-macbook-pro-15-inch-with-retina-display-late-2013/>

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## VI) Compare page

	Apple MacBook Pro 15.4-Inch with Retina Display	Alienware 17	ASUS Zenbook 13.3-Inch Touchscreen Ultrabook
Operating System	Mac OS X Mavericks	WIN 7 Home Premium, 64Bit, SP1	Windows 8, 64Bit
Graphics Coprocessor	Intel Iris Graphics	NVIDIA® GeForce® GTX 770M	Intel UMA HD5100
Item Weight	4.5 pounds	9.2 pounds	2.6 pounds
Max Screen Resolution	2880x1800 pixels	1920 x 1080 pixels	2560 x 1440 pixels

In this compare page, users can tell the differences between models easily by looking at the special pie charts. According to the responses from questionnaires, CPU, Hard Drive Size, Screen Size, and RAM are the top 4 features that users care about most. In the middle of the chart, it shows the ratings with detailed scores. The same dark blue up-side-down triangle icon appears here to tell users if they want to see more specification comparing, they can scroll down at the icon. Also, social network plug-ins at the right side supports posting comparison info to users' timelines.

[Mappings] Dark blue up-side-down icon maps scrolling down.

[Annotation and Reflection] Based on using the social networks as a discussion platform, users can keep their annotation for products' comparison.

[Information Visualization] I invent the special pie chart to integrate key features that users care about most in one figure, and they are intuitive to compare to each other.

[Color Theory] For a more comfortable seeing, I choose earth tone, low saturation colors, to draw the figures.

Apart from those design principles mentioned above, relating to different pages, Separation (use white areas between contents), and Consistency in color (main is blue, but different in value and saturation).

### 3.6 Refine the design according to the feedback

After showing my initial design to some friends of mine, I got their feedback and refine the design. Most of the changes happen in the product list page.



At beginning, the above bar was designed as at the top of products list and fixed there. But all of my friends mentioned that it was really inconvenient to go back to the top of the page just for pressing the “Compare Selected” button.

As a result, I adjust it to the bottom of the page at the same position with “Sort By” and “More”.



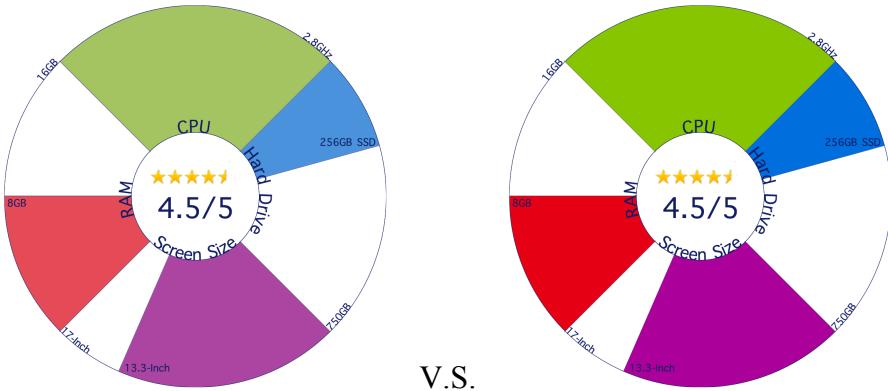
The other improvement comes from our TA's feedback. At first, I was hesitated about how to make sure users know their selected laptops for comparison. So, the advice is that using an icon or a figure to mark the laptops that have been selected. Finally, I choose the green checkmark to accomplish it.

## 4. COMPARE DESIGN CHOICES

Choosing a good way to accomplish the sensemaking tasks and meet all the users' needs directs the decision of design choices. Among all the choices, here introduces three of them with examples.

### I. Color choices

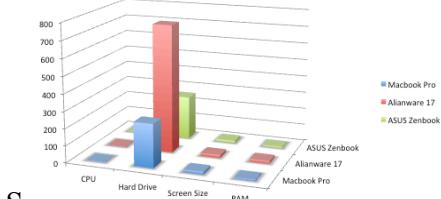
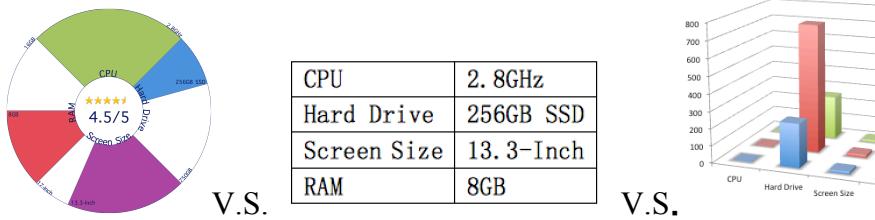
Using color efficiently can help users to understand some conceptual representations. It is also useful to distinguish differences. However, a bad color harmony will lead uncomfortable to users.



For example, the above two pie charts are only different in saturation. The left one has lower saturation, which is chose to implement in my design. The colors used in the right one are too striking to our eyes, and it is hard to recognize the labels in some colors, like in the purple fan. While the left one gives us a more smooth feeling.

## II. Data visualization choices

As users' needs show, only provides numbers of the laptops' parameters are not intuitive for common users. So, in this design, it visualizes some key parameters in compare page, but there are lots of ways to do data visualization.



The example is the comparison between pie chart, table and histogram. Table can show the data clearly but cannot give users an intuitive feeling about those numbers. Histogram may be good for comparison in one aspect, however, it is horrible that comparing several aspects at the same time especially they have huge difference in range. Thus, I choose the pie figure, which can visualize the data into the colored areas and also can be compared across parameters.

## III. Content choices

For comparing the parameters of laptops, there are so many data can be included in the chart or the tables. But, most of the respondents require that they only want to see some key features, while others can be hided at first. If they want to look the other features, that information is also accessible.

Operating System	Mac OS X Mavericks	WIN 7 Home Premium, 64Bit, SP1	Windows 8, 64Bit
Graphics Coprocessor	Intel Iris Graphics	NVIDIA® GeForce® GTX 770M	Intel UMA HD5100
Item Weight	4.5 pounds	9.2 pounds	2.6 pounds
Max Screen Resolution	2880x1800 pixels	1920 x 1080 pixels	2560 x 1440 pixels



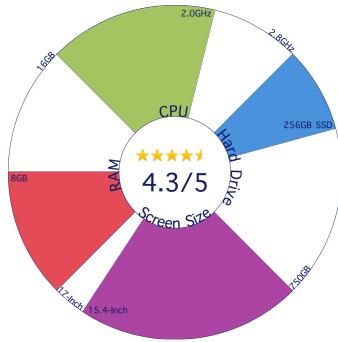
Based on the results of questionnaires, top 4 parameters are compared in a pie chart; the other 4 in top 8 are in the table (shown above); the other parameters are hided. After

scroll down or click the up-side-down triangle icon (emphasized in a red circle), it will show more information about the products. Therefore, the content choice is mainly based on the data gathering results.

## 5. VISUALIZATION AND INTERACTION TECHNIQUES

### 5.1 Visualization techniques

I) Special pie chart for comparison



II) Pie chart for showing available room



III) Line chart for showing history prices



IV) Rating using star icon



V) Using sketch, computer graphics, flow chart and screen shots to the process, the structure, and the prototype of the design.

## 5.2 Interaction techniques

- I) Move mouse to trigger drop-down
- II) Left click mouse to finish most of the operations
- III) Input search query or content with keyboard

## 6. CONCLUSIONS

This report introduces 5 sections about introducing the design briefly for technology shopping assistant. In introduction, it tells the motivation, design principles and sensemaking tasks. In the second section, it conceptualizes the relationships among semantic features. In the third section, 6 steps describe the design scenario. In the fourth section, it compares different design choices and explains why finally choose them. In the last section, it shows visualization and interaction techniques.

## ACKNOWLEDGMENTS

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