DESIGN DIARY 1

IS573 - FALL 2013 – DECEMBER 17

IREM GOKCE AYDIN

1. BACKGROUND INFORMATION

Many of us use internet to buy or sell products. So we are used to some terms like:

Online shopping: ".. form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser"[4]

Online payment: Credit card or PayPal accounts are commonly used for payment[4].

According to comScore analytics, there is an increasing trend in the growth of travel e-commerce sales reaching 103 billion US dollars in 2012 (Figure 1). Their findings show that the most visited online retail website is Amazon sites with 162 millions in the 3rd quarter of this year (Figure 2).

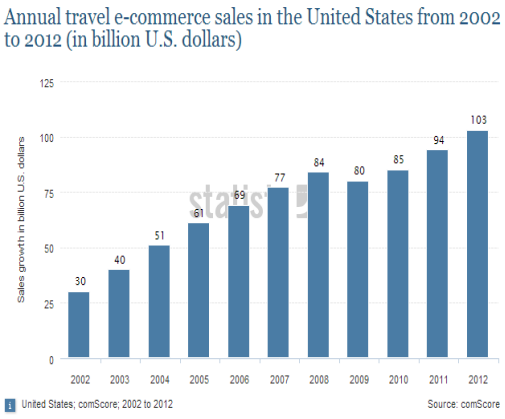

FIGURE 1- ANNUAL TRAVEL E-COMMERCE SALES IN US

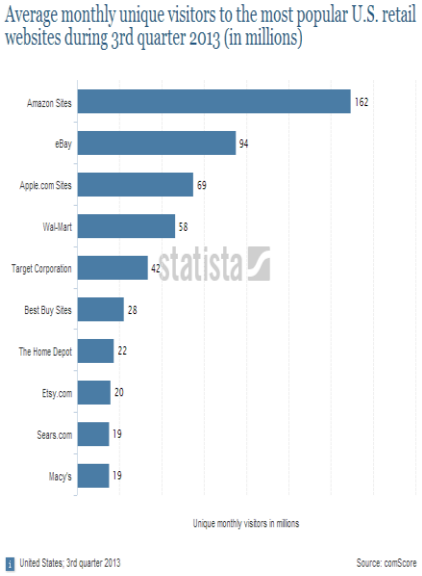

FIGURE 2 - AVERAGE MONTHLY VISITORS TO US RETAIL WEBSITES

2. THEORY

The cycle of online shopping completes like the following [5,6]:

1. You make online purchase providing your credit card information.
2. A shopping cart program on the web store's Payment Page sends data to the Transaction Processor.
3. Transaction Processor connects to User's account and verifies funds and identity.
4. Transaction Processor gets the results back.
5. Transaction Processor sends results to the webpage informing you that purchase is OK'ed or denied.
6. For OK'ed purchases only, Transaction Processor sends payment order to a Settlement Processor.
7. Settlement Processor sends authorization to your bank to pay for the purchase.
8. Your bank sends funds to the Merchant's bank.
9. The Merchant receives funds and accounting details of the transaction.

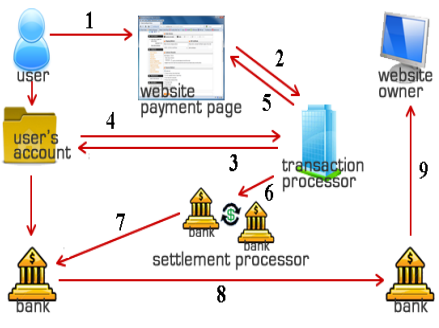

FIGURE 3 – ONLINE PAYMENT TRANSACTION CYCLE[5,6]

3. USABILITY PROBLEM

After shopping or registration for a service, users are expected to fill payment information to start the online transaction. However, when the user clicks on order/complete buttons, sometimes the transactions fail at some stages. But the web site shows only a frightening error text and leaves the user in panic and frustrated. Because, the users expect to welcome payment summary or order confirmation page instead of an error text. I have experienced this usability problem in two cases. One of was with ets.org and the other was with cheaptickets.com.

EXPERIENCE-1

When I tried to register for TEOFL IBT test over ets.org two months back, after selecting my payment method (Figure 4) and fill all my credit card information, I clicked on "Order" button. However, I encountered with an error text just saying "An application error occurred, please wait one-two minutes and resubmit the information." (Figure 5). And there is only one "OK" button on the page. When I clicked on it, it redirected me to my TOEFL Home Page like nothing happened.

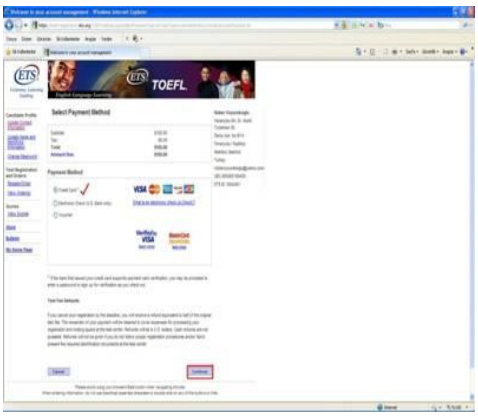

FIGURE 4 - ETS.ORG PAYMENT METHOD PAGE

FIGURE 5 – ETS.ORG PAYMENT RESULT PAGE

After a little shock, I tried to see whether my order was completed by clicking on "View Orders" button but it was saying there was no registration for a test. So I ensured there was error on transaction and tried to check whether the amount was withdrawn from my credit card account. I realized that the money was taken and it was in provision state. The amount was 185$ which was considerably important for me. So I have tried to find a solution for the problem. In the ETS Home page, there is a "Contact Us" button. I clicked on it and see "Before Test" title (Figure 6). When I clicked on the suggested email, it redirected me a different website, prometric.com. I found "Register Complaint" button and sent my complaint through a form (Figure 7).

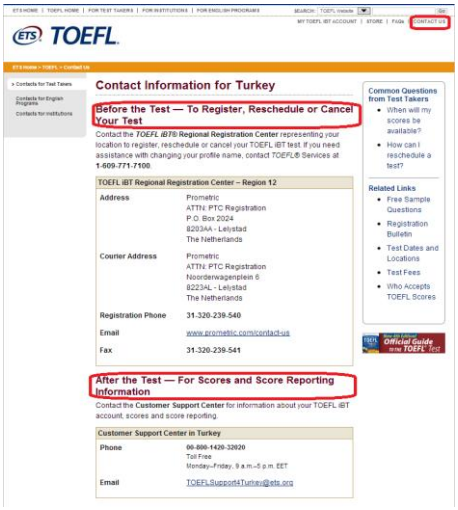

FIGURE 6 – CONTACT US PAGE OF ETS.ORG

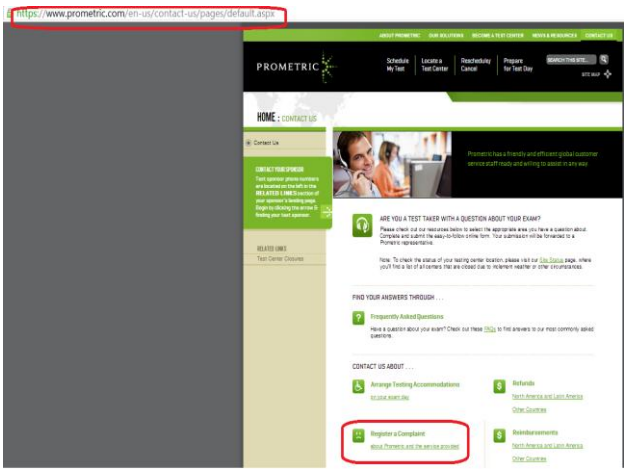

FIGURE 7 – REDIRECTED FROM ETS.ORG CONTACT US PROMETRIC.COM

Prometric.com replied my email and after apologizing they offered me an email address to report my problem, which is on the "After the test" section on the "contact us" page of ETS. After long conversations my money was refunded and I re-registered for the test (Figure 8).

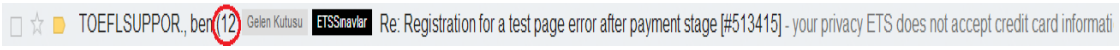

FIGURE 8 – EMAILS BETWEEN ME AND TOEFLSUPPORT4TURKEY

3

EXPERIENCE-2

Similar payment error problem occurred to me while buying tickets from Istanbul-Lansing with the price of approximately 1400$ (Figure 9). So the panic level was much higher with this amount of money. There was no email address and when clicking the "Customer Support" on home page, search box appeared. I typed something like "payment error" and after selecting an unrelated answer, the contact option window finally appeared on the right end side (Figure 10). We called the customer service and they just said that "These can happen sometimes, please wait one business week for refund". There was no information about these on the page and if we had not called them, we wouldn't have known that we should wait for one week.

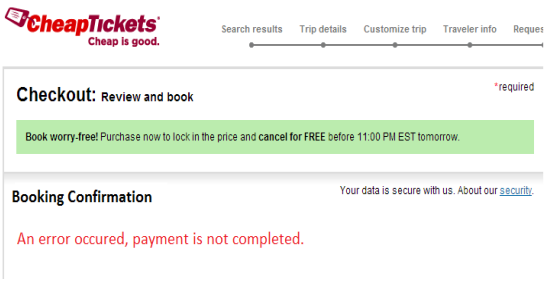

FIGURE 9 – BOOKING CONFIRMATION ERROR PAGE

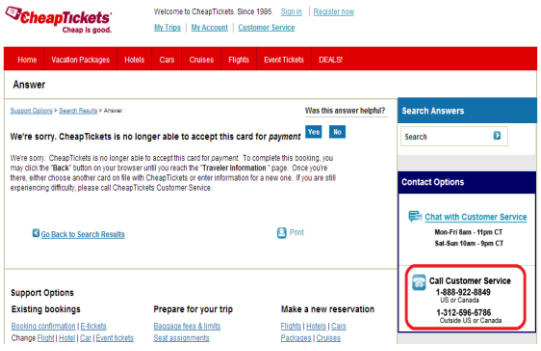

FIGURE 10 – CONTACT OPTIONS FINALLY APPEARED

4. LITERATURE MAPPING

As Pertet and Narasimhan (2005) states that "a survey done by TeaLeaf in October 2005 indicates that 89% of all online customers have experienced problems when completing transactions online". We can say that these transaction errors are a part of the possible failure points of the systems. However, the interfaces for these errors should be improved.

According to Norman's seven stages of action cycle, in this usability issues, the failures are not at the execution side (left), but on the evaluation (right) side (Figure 11). Because users' intentions are not correlated with the results. For a full cycle:

- My goal was to register for TOEFL Test
- My intention was to complete registration process over ets.org
- I set my sequences of actions as signing up to the system and following the registration for a test steps.
- I executed all the steps thoroughly and as a last execution I clicked on "order" button.
- After the transaction process occurred in the backend world, I perceived an error message
- I interpreted that there was an error in the transaction process
- I evaluated this result as frightening because my confirmation screen didn't appear. And I felt that a struggling progress was waiting for me.

At the end, in addition to not accomplishing my initial goal, the cycle was repeated unnecessarily for another goal to deal with the problem itself.

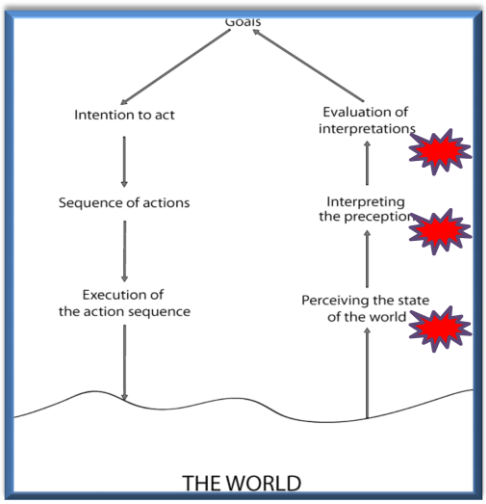

FIGURE 11 – NORMAN'S SEVEN STAGES OF ACTION

5. SOLUTION SUGGESTIONS

The errors on the payment pages can be critical for the users who have restrictions on time and concerns about the amount of money transacted. Aside from these drawbacks, the interface should ease the process of dealing with these problems.

According to Nielsen's Heuristics[1]:

- **Feedback** – "not leave user to guess what is wrong especially at the downtimes"
  Instead of "An error occured" the text should include "Transaction could not been completed successfully" or etc.
- **Good Error Messages** – "help the user to solve the problem, constructive", error recovery
  Instead of finding the emails/phone numbers myself, the web site should serve it at the error page.
- **Help and Documentation** – "error messages should be linked to help documents"
  The web site should modify the error pages in terms of step by step solutions and link to the necessarry help documents but not to another website which is an another challenge for the user.

6. REFERENCES

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[2] Norman, D. *The Design of Everyday Things*. "Preface to the 2002 Edition", New York, 1988.

[3] Pertet, S. and Narasimhan, P. Causes of Failure in Web Applications. Research Showcase, Carnegie Mellon University, Pittsburgh, 2005.

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[6] http://total-merchant-accounts.com/blog/how-your-online-purchase-works/

[7] http://www.statista.com/statistics/271450/monthly-unique-visitors-to-us-retail-websites/

[8] http://www.ets.org/tr/toefl

[9] http://www.cheaptickets.com/

DESIGN DIARY 2

IS573 - FALL 2013 – DECEMBER 17

IREM GOKCE AYDIN

1. BACKGROUND INFORMATION

Everyday we use many of the web services as regular activities. These web services include mail services like gmail or outlook. According to IDC's research on the most popular activities on smartphone usages in August 2013, email is the top activity with 78% over all (Figure 1)[4].

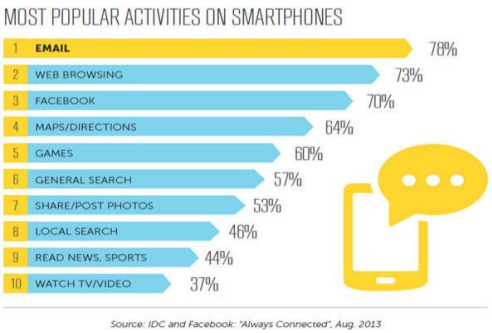


FIGURE 1- MOST POPULAR ACTIVITIES ON SMART PHONES[4]

Among the mail service competitors, according to comScore findings, Google's Gmail has made an apparent jump from 250 million to 300 million unique visitors from December 2011 to December 2012. Microsoft's Outlook is following Gmail and Yahoo Mail is trying to survive in this battle (Figure 2)[5].

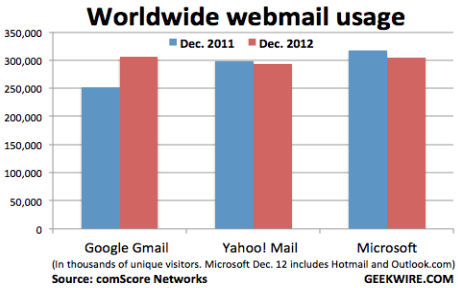


FIGURE 2- WORLDWIDE WEBMAIL USAGE FROM 2011 TO 2012[5]

Besides of these mail services, some web applications of these services are used to support the front end web services for mail servers like Exchange or Office 365. Many of the websites are using Outlook Web app for their mail server front end (Figure 3)[8].

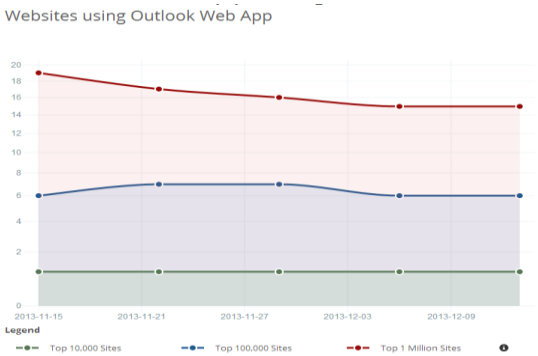


FIGURE 3 – WEBSITES USING OUTLOOK WEB APP[8]

2. USABILITY PROBLEM

One of the problems with mail services are related to ease of use. Because email checking is one of the most repeated actions, the steps should be easy and quick. I have experienced some usability problems with Gmail and Outlook Web App.

EXPERIENCE-1

Before mid 2013, to open chat gtalk screen in gmail interface, user had to follow two steps:

1. Hover the friend's name on the chat list(Figure 4)
2. Click on the "start chat" buton(Figure 5)

(If you directly click on the friend's name on the list, it used to open send email interface instead of chat.)

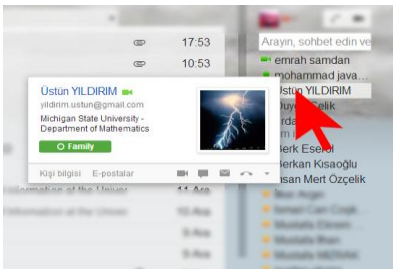


FIGURE 4 – GMAIL CHAT WINDOW OPEN STEP1

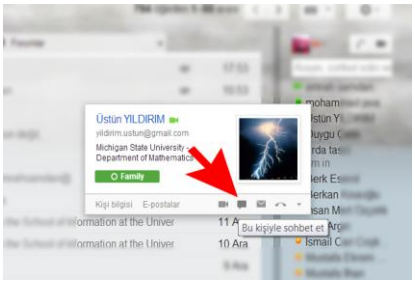


FIGURE 5 – GMAIL CHAT WINDOW OPEN STEP2

2

I had given feedback using the help window interface about this problem (for me) (Figure 6). Within the new interface introduced as "Gmail Tabs Inbox View", this usability issue has been handled suprisingly in April 2013! Of course this is not through me but I am happy to contribute to the process.

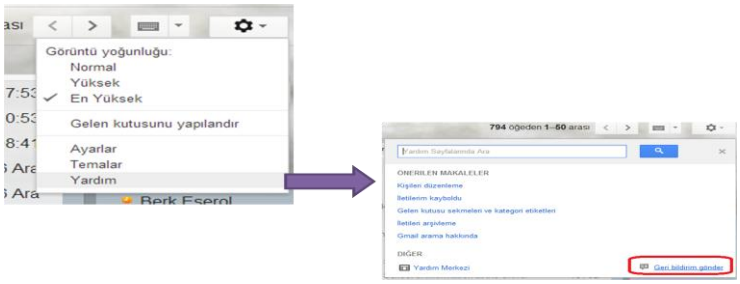


FIGURE 6 – GMAIL GIVE FEEDBACK STEPS

Now to open chat gtalk screen in gmail interface, user had to follow one steps:

1. Click on the friend's name on the chat list (Figure 7)

(If you want to send email, hover on the name and click "send email" button, meaning the flow is vice versa for chat email now.)

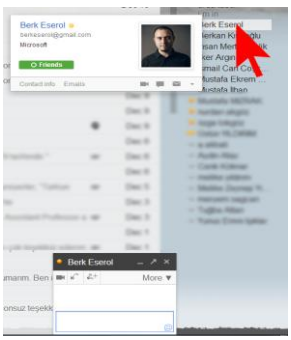


FIGURE 7 – NEW OPEN CHAT WINDOW FLOW

1. One of the continuing problem is sometimes confusion about who is talking on the chat screen because of the same font size and color.Or the “copied and pasted text” on the chat window. It is sometimes perceived as the statements of one of the person who is chatting (Figure 8).

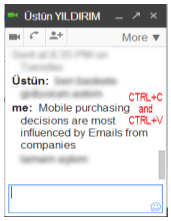


FIGURE 8 – GMAIL CHAT WINDOW (GTALK)

2. Another problem is not to differentiate the type of the mail easily. To see the mail is from hangout chats, the user should look at the right end side. But as a user, we are used to see things on the left side. Sometimes I have to click on the mail to see the right end side quickly among other listed mails to trace the line (Figure 9).

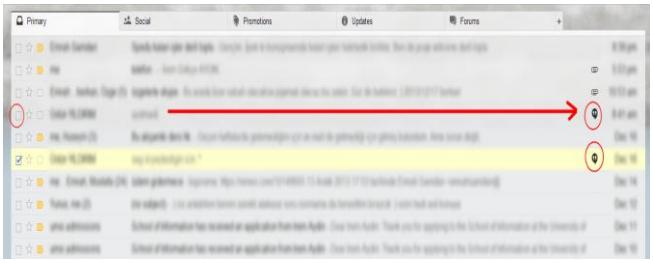


FIGURE 9 – GMAIL INBOX FIELD WITH INDICATION OF CHAT TYPES

3. Last problem is to trace multiple conversation mails. There is too much line and duplicate date information (Figure 10).

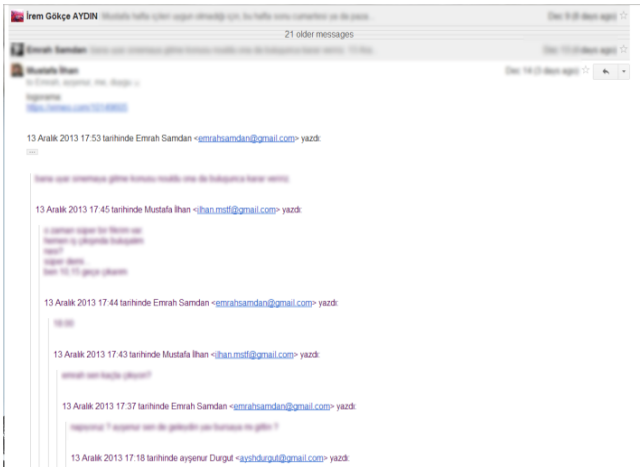


FIGURE 10 – GMAIL MULTIPLE EMAIL LOOP

EXPERIENCE-2

Similar ease of use problems are appeared in Arcelik’s web mail application which uses Outlook Web App.

1. When a mail is received, the application doesn’t show it on the tab title section. This is very annoying if you work with multiple tabs on the browser (Figure 11).

FIGURE 11 – OUTLOOK WEB APP IN TAB VIEW

2. Another problem is the absence of auto login functionality. The user has to fill in his user name and password each time (Figure 12).

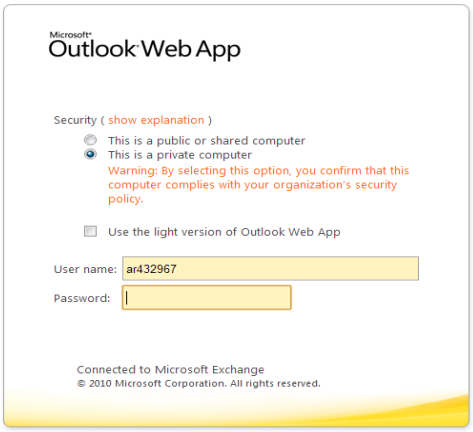


FIGURE 12 – OUTLOOK WEB APP WITHOUT AUTOLOGIN FEATURE

3. LITERATURE MAPPING

As Pilgrim (2008) states that "many developers are inspired by what is technologically possible possibly disregarding good design practice and fundamental theory" [3]. While adding some main functionalities to the services, some little but mostly used (or needed) features are overlooked.

According to Norman's seven stages of action cycle, in these usability issues, the failures are not at the execution side (left), but on the evaluation (right) side (Figure 13). Because users' intentions are not correlated with the results. For a full cycle (for text copy-paste case in Gmail):

- My goal was to cite from web and send it to my friend on the chat screen, or email send screen.
- My intention was to complete copy-paste action in the paste screen.
- I set my sequences of actions as copying the text and paste it on the talk or write email screen.
- I executed all the steps thoroughly and as a last execution
- After the paste operation, I perceived the text as my own written text, because there is no difference.
- I interpreted that there was no distinction with the copied text and my own text while sending the text to my friend.
- I evaluated this result as I am fooling my friend or sometimes even myself. Because it can be sometimes hard to trace your conversation by eliminating copied-pasted texts which is not your own words.

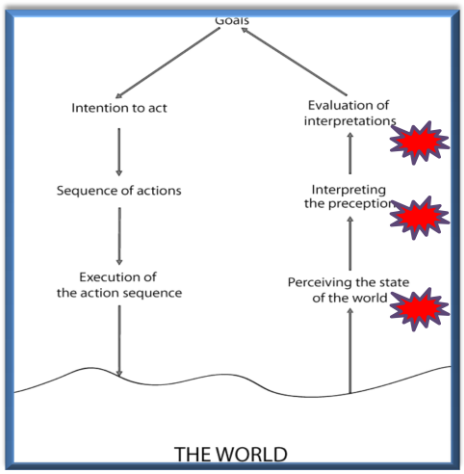


FIGURE 13 – NORMAN'S SEVEN STAGES OF ACTION[2]

4. Solution Suggestions

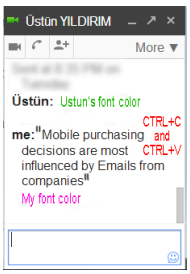
The interface should be improved to ease the process of dealing with some needs.

According to Nielsen's Heuristics[1]:

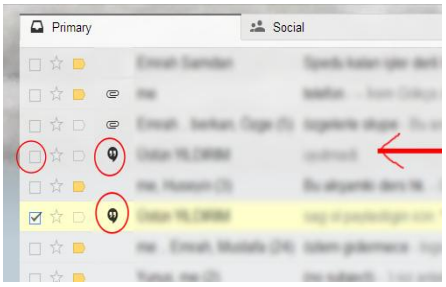
- **Visibility Of System Status** – "the system should always keep users informed about what is going on,"
  For the Outlook Case's first problem the received number of mails can be shown on the tab view by adding a plugin to the browser:

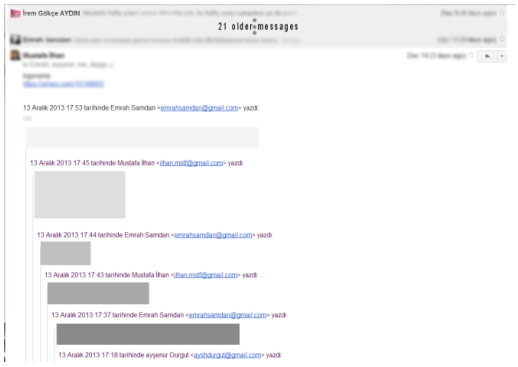
- **Recognition rather than recall** – "The user should not have to remember information"
  For the Outlook Case's second problem remember user name&password functionality can be added by adding a plugin to the browser:

- **Flexibility and efficiency of use and Error Prenvetion**– "Allow users to tailor frequent actions and prevents a problem from occurring in the first place"
  For the Gmail case's first problem, copy-paste shortcut for texts should be supported by error prevention principle by coloring each user's talk text differently and giving a consistent style to the copy-pasted texts to differentiate them easily not to confuse:



- **Aesthetic and minimalist design and Match between system and the real world**– "Dialogues should not contain information which is irrelevant or rarely needed and making information appears in a natural and logical order."
  For the Gmail case's second problem, the order of type of mail can be moved to the beginning of the row to be seen more easily. For the Gmail case's third problem, the interface can be simplified such that the history can be visualized with gradient colors and repeated date can be removed by including only hour data for the in current date emailing. And instead of using lines for the older emails, some simple dots can be used.





5. REFERENCES

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[9] http://mail.google.com/

[10] https://mail.arcelik.com/OWA/

DESIGN DIARY 3

IS573 - FALL 2013 – DECEMBER 17

IREM GOKCE AYDIN

1. BACKGROUND INFORMATION

Everyday we use many of the switches in the place where we live or work to control light or air conditioner. Or plug our smart phones to the charge cable. These two interactions with switches and cable plugs can sometimes become challenges.

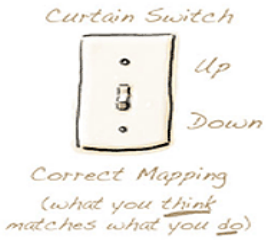

FIGURE 1- LIGHT SWITCH

2. USABILITY PROBLEM

EXPERIENCE-1

To light the correct bulb is sometimes hard because of the location of the switch (our mapping perception for the correct switch and light) or the number of switch control.

FIGURE 2 – MULTIPLE SWITCH

One of the cases is in Informatics Institute. One of the switches near WC controls the lights in the hall. As a user at first glance I thought that it controls the lights of the WC or near it but instead it is used as one of the switches “on” the hall way.

FIGURE 3 – SWITCH PLACE AND EFFECT MAPPING CONFLICT

EXPERIENCE-2

Similarly, to control the correct air conditioner with the smart switch choice is another challenge. One of the cases is in my work place. The control switches of the air conditioners expanded on the place are not logically placed. The location of the controlled conditioner is not the near one but it is far away.

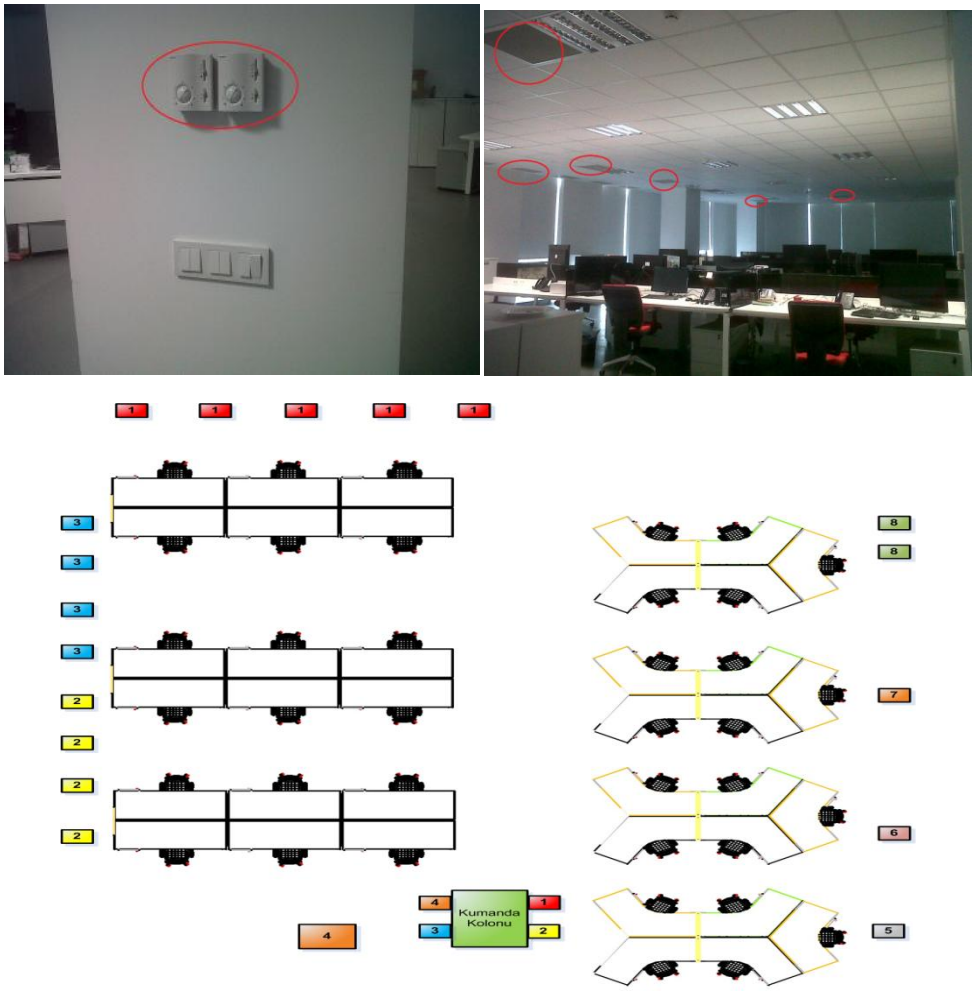

FIGURE 4 – AIR CONDITIONER CONTROL SWITCH AND EFFECTED CONDITIONER CONFLICT

EXPERIENCE-3

One of the cases is with my cell phone charge cable. Everytime when I try to plug the cable to the phone, I try both sides. The USB icon on the cable is not clearly seen.

FIGURE 5 – SMART PHONE CHARGE CABLE PLUGGING ORIENTATION PROBLEM

3. Literature Mapping

According to Norman's seven stages of action cycle, for three cases, the problem in both the action side (left) and on the interpretation and evaluation parts(right). My perceptions(and so actions to light the correct switches) do not corralete with the expected results.

My goal was to open a light near my desk.

- My intention was to use the switches to control the light near me.
- I set my sequences of actions as finding the correct switch and pushing the switch to turn on the light. But finding the correct switch is hard if I don't remember their mapping in my knowledge background(gained with experience)
- I executed all the steps by success or failures until to find the correct mapping.
- In each execution attempt, I perceive that the turned on light is not intended (for the failure case in the execution)
- I interpreted that the switch and light matching is wrong.
- I evaluated this result as the switches are not logically placed and put in interaction with the lights. I feel that I have to remember(memorize) the mapping not to fail in my next attempt.

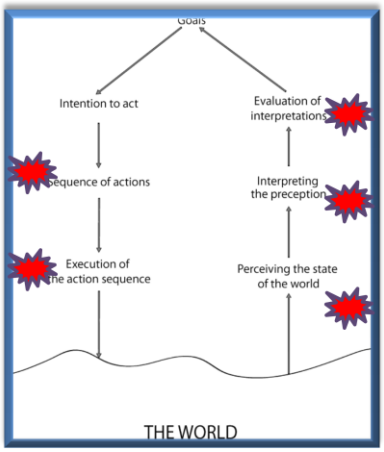

Figure 13 – Norman's Seven Stages of Action[2]

4. Solution Suggestions

The switch and cable interfaces should be improved to ease the process of dealing with some needs and some regular usage failures.

According to Nielsen's Heuristics[1]:

- **Visibility Of System Status** – "the system should always keep users informed about what is going on,"
  Firstly, the switches should be differentiated in terms of states especially if there are multiple switches. It can be a line on the "ON" side:

- **Recognition rather than recall** – "The user should not have to remember information"
  Secondly, instead of estimation the correct lights by trying, a kind of haptic technology can be used. If I touch a switch, the resulting affected lights or air conditionar should be pointed via some spark(an instantaneous light of sound).

- **Flexibility and efficiency of use and Error Prenvetion**– "Allow users to tailor frequent actions and prevents a problem from occurring in the first place"
  For the charge cable input, the color of the cable can be lightened and the icon on the right side should be pointed as implemented on iPods.

- **Aesthetic and minimalist design and Match between system and the real world**– "Dialogues should not contain information which is irrelevant or rarely needed and making information appears in a natural and logical order."
  The positioning of the switches and targeted lights should be rational and easily predictable.

5. REFERENCES

[1] Nielsen, J. *Usability Engineering.* Academic Press, Boston, 1993.

[2] Norman, D. *The Design of Everyday Things*. "Preface to the 2002 Edition", New York, 1988.

and iPods, Samsung Phone, Light Switches in Informatics Institute, Air Conditioner Switches in Arcelik R&D Office.