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TOGO truck information service: Based on mobile tracking system

Kyunghhee Lee

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TOGO Truck information Service:
Based on Mobile Tracking System

Rochester Institute of Technology
Thesis submitted to the Faculty of the College of Imaging Arts and Sciences in candidacy for the Computer Graphics Design degree of Master of Fine Arts

Kyunghhee Lee
February 2012
<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Title</th>
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<tbody>
<tr>
<td>Chief Adviser</td>
<td>Chris Jackson</td>
<td>Associate Professor, Computer Graphics</td>
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<td></td>
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<td>Design</td>
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<tr>
<td>Associate Adviser</td>
<td>Shaun Foster</td>
<td>Assistant Professor, Computer Graphics</td>
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<td>Design</td>
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<tr>
<td>Associate Adviser</td>
<td>Adam Smith</td>
<td>Associate Professor, New Media Design</td>
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<td>Chairperson</td>
<td>Patti J. Lachance</td>
<td>Associate Professor, School of Design</td>
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In our current economic state, instant gratification from the satisfaction by the real time products and services and experiences are in demand for consumers. As a result, there are several if not many of these real-time base services that have arisen from what the consumers’ desire. During the research, I have witnessed the phenomenon that would fit the criteria. The perfect example would be the popularity of meals on wheels in the United States. Setting a new trend in the fast food market, the food truck industry has reached the numbers well over the thousands and still counting with their own unique ideas and innovations. I can confidently say, with the rise of the food truck industry, we have observed the decline of stationary restaurants. But, unlike the mobile counterpart, the stationary restaurants still have one distinct advantage; consumers know where to find them. For example, when struck with a craving for tacos, it is easier to Google a Mexican restaurant down the street, rather than to track down a taco truck. To counterstrike the stationary opposition to quench the hunger for the food truck enthusiasts, several apps have been created. The applications general idea is to pin point gourmet food trucks on mobile maps to even the reliability of playing fields via Twitter feeds, GPS and truck-reported location data. While none of which has achieved an exhaustive or completely accurate system, the search still continues for trucks for users depending on their location.

During the present market condition, I am certain of making an accurate and effective real-time information service would be an interesting subject to approach in satisfying users and business owners desires. In demand of real-time information services, I will create a prototype for a food truck information service, inclusive of real-time location service; GPS, mobile tracking, truck-reported data and alert service. The consumers and the food truck owners will both come out as winners, with relaying precise information via real time communication devices.

As a student studying the art of user experience and interaction design, goal of this study is to figure out how to enhance the user friendly interface along with meeting the expectations of actual consumers. In order to have a deeper understanding about interaction between users and real time
Abstract

location applications to heighten the level of services, I am willing to go above and beyond with through research to develop a next generation real time app during this project. Another critical factor that I, a user experience designer would point out would be communication. A key factor in completing the task, finding a significant way of communication method would be an additional goal throughout this project.
Acknowledgments

A huge thank you to my thesis advisors, Chris Jackson, Shaun Foster, and Adam Smith. These are the people who have helped me concept my ideas, narrow them down to a manageable project, and encouraged me along the way.

Chris Jackson is a respected professor in the MFA Computer of Fine Arts program at RIT. He is patient with his students, and is always willing to lend a helping hand. He has guided me through the learning process of understanding software and has continuously helped me solve any bugs that the Adobe Flash application threw my way.

Shaun Foster is a very friendly professor who explores and investigates for user interface on many different devices with his students. He thoroughly grasps the online user experience, graphical user interface, and has given me constructive criticism throughout the making of my project. Not only that, but he was a constant source of encouragement along the way.

Adam Smith is a very talented and competent professor who knows what students need and how to give a direction to them. He has guided me how to make goal of this thesis and taught me how to work on it.

Also I would like to thank professor Hye-Jin Nae who guided me when I first started this thesis and showed me the direction and taught me how to approach and solve the problem.
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Problem Statement

Consumers’ ingrained lust for instant gratification is being satisfied by many real-time products and services that vastly arise these days. Consumers are also feverishly contributing to the real-time content avalanche. As a result, consumers expect brands and companies to have no choice but to finally mirror and join the ‘NOWISM’, in all its splendid chaos, realness and excitement. With this trend there are tons of web platforms and mobile applications out there for the users to share ideas and information as fast as they please.

During the research, I have witnessed the phenomenon that would fit the criteria, the popularity of meals on wheels in the United States. Setting a new trend in the fast food market, the food truck industry has reached the numbers well over the thousands and still counting with their own unique ideas and innovations. Their main target areas are generally work places, schools, and local hot spots: college campuses, office complexes, industrial parks, etc. The original idea of food trucks were designed for near by consumers with limited time for ease of access to fill their hunger. However after the growing trend of food trucks, many consumers developed their own preference in search of the ideal food truck by using smart phones and the internet. One step further, many food trucks themselves started sharing their information and locations through online community; they have vigorously moved their locations to gain trust and loyalty from customers.

According to current market condition, there is significant demand for real-time food truck location services. There have been several applications that radically appeared in the last couple of years which achieved a measure of success with sharing food truck real-time information. These real-time information services are one effective way of introducing businesses about food truck owners. These services also provide useful information and reliability of playing field to users. However many services currently in the field lack the user experience: visually poor interface, un-useful user interaction, limited entertaining sources, or inaccurate information.

So with this research, I am willing to propose a new direction to solve these problems and show more competent service to better please the consumers.
Problem Statement

To improve the quality of services, there are technical and emotional factors to be resolved: give them a choice of using mobile tracking service for more accurate and differentiated service, find and solve current problems in the system of the user centered design, visually match the design with purpose of service while adding a interesting option in the service that others have not acquired. At the same time for the role of a user experience designer, I plan to design several documentations for easy and effective communications with engineers.

Additionally, I would like to investigate better ways to describe and document the ongoing project while effectively managing the resources. These documentations include workflows, wireframes, visual direction and comps.
Survey of Literature

This section outlines the books, online articles, and artists’ books that is being used for research and inspiration throughout this thesis project.

This article is featured in the book Information Design edited by Bob Jacobson and published by the MIT press. This article is about Information Interaction Design which is a combination of Information Design, Interaction Design, and Sensorial Design. Content and the display of information are key factors, but all elements are considered in order to create a valuable experience for the user.

“The Design of Everyday Things”
This book is a popular guidebook for all designers in interaction design, user interface and human and computer interaction and edited by Donald Norman. Anybody who has ever complained that “they don’t make things like they used to” will immediately coincide with this book. Norman’s thesis explains; when designers fail to understand the processes by which devices work, they create unworkable technology. This book explains a lot about how to think and solve usability issues from users and designer’s perspective.

“Effective Designs of Graphical User Interfaces for the Web and Multimedia Pages”
This book is edited by Alistair Dabbs. He does a good job of emphasizing the reality that today’s digital interface is much more than the standard screen we see on our desktops; interface design encompasses “everything with a screen,” including mobile phones, palmtop computers, and handheld devices. He gives considerable attention to these interfaces as well as the use of animations and 3D in interface design.

“Web user interface design, forgotten lessons”
Nerurkar U edits this book. A number of prescriptions are in vogue for designing Web user interfaces, but Web site usability continues to be a serious issue. In comparison, the usability of traditional GUI applications is a couple of notches better. The key difference is in the design methods used. The author
argues that improving Web design methods is possible by learning from the GUI design approach.

“Human-Computer Interaction - INTERACT 2005”
Alistair Sutcliffe edits this book. An evaluation of two websites with the same content but different interface styles (traditional menu-based and interactive metaphors) is described. A formative usability evaluation was carried out with heuristic assessment of aesthetics followed by post-test memory. The subjects had more problems with the metaphor-based site, but rated it more favorably on the aesthetics heuristics. There was no difference in free memory recall between the sites. The implications for website design and evaluation are discussed.

“A Theoretical Framework for Web User Interface Design and Evaluation”
Phing Zhang edits this book. The objective of this paper is to provide a conceptual framework and foundation for systematically investigating features in the web environment that contribute to user satisfaction with a web interface. This research uses Herzberg’s motivation-hygiene theory to guide the identification of these features. Among the implications and contributions of this research are the identification of web design features that may maximize the likelihood of user satisfaction and return visits to the web site.

“Web Accessibility and Human Centered User Interface”
Seok, S. and Wojcik, A. edits this book. Digital inclusion and web accessibility are integral parts of modern culture and, as such, have implications for social accountability. The World Wide Web Consortium (W3C) has suggested standards and guidelines regarding the inclusion of people with special needs, with an emphasis on higher accessibility and adaptability as the main goal of web design. The user interface is the place where users can interact with the information by using their minds. Users with special needs can acquire information by using a human centered user interface. This article highlights the need to investigate the relationship between cognition and user interface.
“Cognitive strategies and eye movements for searching hierarchical computer displays”

Anthony J. Hornof and Tim Halverson edits this book. This research investigates the cognitive strategies and eye movements that people use to search for a known item in a hierarchical computer display. Computational cognitive models were built to simulate the visual-perceptual and oculomotor processing required to search hierarchical and nonhierarchical displays. Eye movement data were collected and compared on over a dozen measures with the “a priori” predictions of the models. Though it is well accepted that hierarchical layouts are easier to search than nonhierarchical layouts, the underlying cognitive basis for this design heuristic has not yet been established. This work combines cognitive modeling and eye tracking to explain this and numerous other visual design guidelines. This research also demonstrates the power of cognitive modeling for predicting, explaining, and interpreting eye movement data, and how to use eye tracking data to confirm and disconfirm modeling details.
Study Area

This project covers many parts of computer graphics design areas such as graphic design, visual design, user interface design, information design, interaction design based on user centered experience design. And it is necessary to have at least the basic understanding about smart phone’s developing skills and communication skills to make smooth and effective process with engineers. This thesis also briefly covers partial Human and Computer Interaction relating to cognitive psychology factors. For the theoretical approaches, Gestalt Theory Grouping Laws and Seven Design Principles will explain the relation between cognitive psychology, user interface layouts, and buttons.

Technically to make this project run as an actual application, I need to have a many developing skills: smart phone developing skills to make the service compatible to the smart phone device, web developing skills to provide stable interaction with online information, and server developing skills to store data from truck owners edited information and end users. However, in an experience designer’s perspective, to reach this goal to complete this project I would need skills in several fields. I have narrowed it down to four skills:
service-planning skill, user centered designing skill, effective documenting skill and simple mobile developing skill. These self estimated skills will help me focus on the research during designing process as well as simple prototyping for better solution of food truck information service.

Project Overview

The process includes four-phase development process: market evaluation, UI and visuals, develop, usability testing and summarize.

First of all, the purpose of market evaluation is to understand current market flow, trends and competitive products. With this knowledge, I can figure out the pros and cons of my concept and other competitive products. And then I am able to get a sense of direction to improve the quality of service and find the right position to pursue in the current market. Simultaneously, I am able to collect competitive services information such as contents, functions, designs, etc.

To find appropriate position for this service, STP analysis is used: segmentation, targeting, and positioning. It seems like most of food truck information services target the general public. Even if there is an obvious outcome with the re-evaluation about food truck industry, it is important to double check and find out appropriate places for each services.

SWOT analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities and Threats involved in a service or in a business venture. I used SWOT analysis to specify the goal of TOGO truck information service and identify the internal and external factors that are favorable and unfavorable to achieve the goal.

Second, UI and Visuals sections are divided into six phases to explain each processing steps of creating this service and communicating with engineers:
Precess_Project Overview

brainstorming and sketches, workflows, wireframes, logo and colors, comps, specs to deliver. Each step shows status of how to approach and solve the issues on each time frame.

Third, development section describes quick understanding of how this service is developed technically; there are simple descriptions and the description of tools being used.
Precess_Market Evaluation

Competitive products evaluation

1. Food Truck Fiesta

Food Truck Fiesta is a simple $.99 application that supports the iPhone and Android based on a blog of the same name. Containing minor faults, the application has one good service structure, interaction with its own blog to cover each device's pros and cons: web-based, mobile-based service. The blog posts updates about new food trucks and food-truck events, all while maintaining a catalog of food trucks and their whereabouts on a live map using their Twitter feeds. When users click on the truck icons, it pulls up its Twitter feed along with visual information for mobile service users. This service provides moderate food truck information services; shows stationary food truck location on the map along with Twitter information. I would generally point out that this particular service relies excessively on the Twitter feeds to fill most of their content. Another downside to this service would be the
availability; it only serves the Washington D.C. area.

For the visual and user experience design of this service, they have poor aesthetic consideration. A good example would be from poor visibility from the map view. The trucks represented by thumbnails are so merged together it is hard to locate in a smart phone display. When users tap on the thumbnail, the basic information dialog box displays appear with general information. The second depth of application is food truck information page. On the truck information page it is necessary to solve aesthetic problems and prioritize most valuable information to show them effectively for service users. Also it is possible to think of hierarchies of all service menus.

2. Roaming Hunger

Similar to Food Truck Fiesta, Roaming Hunger is a blog that chronicles food truck news and events. Its scope covers much larger than L.A., however, its catalog includes a smattering of trucks in most major cities. Based on their
Precess_Market Evaluation

information in blogs they also have launched a free iPhone application. Comparing with other application, smartly this application uses tweets and calendars to keep track of the trucks. Using calendars, they went in a different approach to track down food trucks and inform the end-users. With a new approach, this application allows users to plan ahead by searching for trucks that are open at different time and days. However, map points represent predictions rather than actual locations, but this application is the only one using the reported data for tracking food trucks in the market. This application would be more effective and popular with real-time information rather than predictions. Other than the innovative idea above, this service is similar to all the applications in the market now that provides the location, tweets, and likes/dislikes.

Visually, this service uses reasonable colors for the food trucks information service along with interesting graphic assets to make the service enjoyable for users, with the exception of UI. Service menus that users can access to get information are not well grouped, and some functions are hard to recognize what they stand for. Also they are using unnecessary buttons that re-route the users for making it difficult to reach their final destinations instantly. Also, it is possible to think of hierarchies of all service menus. For example, map view, list view, search, recommended trucks, near me, types of truck, all these service menus are spread on top and bottom menu bars. Also, some icons do not function as their symbolic meaning, such as the ‘near me,’ which re-routes to other service menus. This application has errors of efficiency and effectiveness.

3. Road Stoves

This service also has a blog which shares much useful and beneficial information. But the problem is that the blog and phone application do not interact with each other. Same as many other food truck services this application makes it easy to access the Twitter feeds and trucks menus; a lot similar with Food Truck Fiesta.
This service uses the basic iPhone UI assets. This is a simple application to target the users with the lack of user interface, but lack the visual attraction and the direct connection the with food truck services. Another glitch would be the settings of the service menus, supporting service menus like settings such as notice, information stand out more than the actual main service menus. Similar to Food Truck Fiesta, this application also has a problem missing the visual and experience in design. It is possible to think of hierarchies of all service menus as well; near me, map view, all truck is not on same hierarchies. It would be better combine the Map View and List View together to create a function like Near Me and All Trucks together. After that, it will need to position these two groups on different hierarchies. It is common mistake made by designers and which makes the service inconvenient.
4. TruxMap Lite Food Truck Map

This service contains both the blog and the information within the mobile application. TruxMap is a free iPhone and Android app that plots open food trucks near users in green and soon-to-open food trucks in blue. It separates itself with other applications that mainly categorize trucks with only the open and close functions. Same as Food Truck Fiesta and Road Stoves, this service uses the Twitter feeds to track and plot their locations. All these services do not find trucks for users; it just informs users where to find food trucks by Twitter tweets. This application covers and tracks food trucks in 21 cities, but the majority of them are in Los Angeles, Austin and New York. Users can request new trucks be added to the app via the website. Same as other applications users need to login to website to upload, edit and request changes.

This application is trying to show as many information as they can in one screen. Additionally graphic assets are little bigger than necessary. The color usage is too strong which makes many unnecessary assets to stand out. But it shows good hierarchies compare to other applications and also clearly shows each step to the final destination that users are trying to reach.
Precess_Market Evaluation

STP Strategy

To understand basic market situation and to find out the food truck service users matching with TOGO truck information concept, using STP Strategy is one standard way to do Segmentation to find potential users for TOGO truck information service concept. Targeting to find out the market where this service focus on, Positioning to understand what this service need in the customers mind and how to achieve it.

Segmentation: People who are 15 to 60 years old, using smart phone, enjoy street foods, lives in cities with more than 5-10 trucks, both male and female, etc

Targeting: There are many food truck services in the market. So, among the people above, it is necessary to target the needy with accurate information with entertaining factors and better usability.

Positioning: To position TOGO service in the market, TOGO service provides differentiated functions and visuals: clean and readable visuals, mobile tracking, and notification alerts. Make promotion for truck owners and end users to introduce TOGO truck information service and find out and look for online marketing to enlarge market share.
Marketing Mix

Marketing Mix is a business tool used in marketing products. The marketing mix is often synonymous with the ‘four Ps’: price, promotion, product, place. However in recent times, the ‘four Ps’ have been expanded to the ‘Seven Ps’ with the addition of process, physical evidence and people. Four Ps are a model that focused on more of product and Seven Ps are focused on service industries and knowledge-intensive industries. For TOGO truck information service there are no needs of using physical evidence and internal people resources, therefore for Four Ps works better with this conceptual study.

First of all, this product is a smart phone application that users are able to get easily from app store; if I assume that TOGO truck information service is actual application. Throughout the design process, I tried to improve simplicity, visibility, and readability, so the users can easily find the right menus of functions to get to their final destination. This improves usability and better competitive advantages compare to other applications on the market. And to have more accurate information service, mobile tracking technology is used on this application. In addition to this TOGO truck information service has functions which provide informative entertaining factors like favorite trucks alert service. To make this application run soundly on the device, having quality assurance continuously is one of the most important things to do before and after launching it in the market.

Second, there are a couple of service charges of $0.99 for downloading their application, but the rest of applications would be free. To compare with other applications, TOGO truck service has more functions and better visual and UI. If the price is higher than $0.99, users may not download because $0.99 is highest and the most popular value in the food truck service market. For the TOGO truck service, I believe $0.99 is a reasonable price for the consumers.

Third and forth, online app store is the only rightful place where one can upload non-free application. But, I am willing to consider using websites or any other online marketing for promotion of this application. At the start of this
applications launch in the market, it is possible to make promotional events for truck owners with word-of-mouth marketing through truck owners to end users.

SWOT Analysis

SWOT Analysis is a strategic planning method to evaluate the Strengths, Weaknesses, Opportunities and Threats involved in a project or in business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieve that objective. So to understand what internal and external factors can be affecting to TOGO truck information service and figure out right strategy, I used SWOT Analysis.

Strengths: Accurate food truck information service using mobile tracking. Easy to edit and update through smart phone. Have visuals fit into “Food truck information” service compare with other applications. Added informative and entertaining functions to provide better quality of service. Used well organized and user centered UI.

Weaknesses: There is no website to interact with for TOGO truck service. Less vendor information compare with other existing services. No interaction with other SNS

Opportunities: Expected effectiveness from end user for a new concept of tracking food trucks. Expected effectiveness from truck owners for easier upload and editing application.

Threats: Many competitive products on the market. Last-mover application on existing market.
To stay in a better position in the market, TOGO truck information service should try to maintain its position on S/O. After the release, market situation need to be checked all the time and if it is necessary, some of the functions will be added or changed. For now with the S/O I am able to provide accurate, simple, easy-to-use fun food truck information service.

## SWOT Matrix:

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<th>Opportunities</th>
<th>Strengths</th>
<th>Weaknesses</th>
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<tr>
<td>S/O – use strength for opportunities</td>
<td>W/O – find opportunities from weakness</td>
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<tr>
<td>- With mobile tracking, provide more accurate service.</td>
<td>- Although there is no website to interact with and share more information, give truck owners and end users to make their own information through mobile phone.</td>
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<tr>
<td>- With effective UI, truck owners upload and edit food truck information through smartphone.</td>
<td>- Users can submit and edit their information through smartphone. No needs to access website.</td>
<td></td>
</tr>
<tr>
<td>- With favorite food truck alert service, give users entertaining factors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- With better visuals and user centered interaction, make users easy to enjoy the service.</td>
<td></td>
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<td>- With information from other competitive application, it is easier to gather their truck information and add them to TOGO food truck service.</td>
<td>- may add a function interacting with other SNS or website later on.</td>
<td></td>
</tr>
<tr>
<td>- Although TOGO truck is last-mover application on existing market, appeal to users with more accurate information and effective/user centered design</td>
<td>- put for now, appeal to users with simple and accurate information service.</td>
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For the designing process of TOGO truck information service, I have made a service architecture, user workflows, wireframes, color usages, sizing spec, icon library, comps, scenarios & guideline, graphical prototypes and others specified documents to approach better user centered design step by step and to communication with engineers how TOGO service will be used in its native environment.
For the designing process of TOGO truck information service, I have made a service architecture, user workflows, wireframes, color usages, sizing spec, icon library, comps, scenarios & guideline, graphical prototypes and others specified documents to approach better user centered design step by step and to communication with engineers how TOGO service will be used in its native environment.

Brainstorming and sketches

After coming up with an idea of what kind of application is going to be needed and how to develop it, I need to consider about detailed service contents. The starting point will be sketches; to visualize, make decisions on the necessary contents for this service, how those contents are organized together, and how each functions and pages are interacting each other.

These sketches will develop the brainstormed ideas in depth. I can draw detailed service rules, all possible cases of user interaction of the application, and outside system interaction. I can start to build them for more detailed
TOGO truck service functions before a single code is written. And later, the visual designs and visual specs are going to be specified in roles for each single assets and components.

Mobile application development is not as simple as making current web application available on mobile device. I need to emphasize more on the usability in a small screen device which would be considerate to the users to navigate through the interface with each function. So this is the start point to think about all these user interactions.

Service Architecture & User Workflows

Check service Service Architecture and User Workflows on http://lkinus.wordpress.com/
With these service architecture and workflow, I am able to clean up the idea sketches. Service architecture should show services and functions consisting of information helpful to the people to understand the service structure. And user workflow should explain and show how each menus and buttons interactions with each other. This is a very important step to pay attention to, because if there is a mistake making one workflow, it may cause a big twist for user interaction.

Recently mobile applications are replacing or enhancing a previous workflow process. To design mobile user interface there are more things that I need to consider. The issue would be the users use and interaction with applications on mobile environment compare to other software or web applications. Due to the small screen of mobile platform, I will make the buttons as accurate as possible with the easy to access along with the less hassle to the final destination. The application also should be as simple as possible with necessary amount of information; not too overwhelming, but not to shallow. So in this process, it would be making service architecture and the wireframe, it is very important to implement all considerations above. For TOGO truck information service, there are two main categories: Main service, and Settings. So I used the top menu bar (action bar) on the top of the main screen and made it easy for the users to access the settings. The main service, users can directly search the truck by categories or access most popular trucks from main screen. Applying the pull to refresh on the truck list, I have made it easier for the users who do not wish to approach other areas when they are scrolling lists. Overall I was focused on shortening the steps to final destination on the workflow, which made it easy to access necessary menus from each screens while using user interaction commonly used to reduce the possibilities of users getting lost in TOGO truck UI.
Whether an experience designers is designing a user interface for a website or an iPhone app, it is always a good idea to start with a wireframe. It can be a big time saver if you’re able to nail down the placement of major layout elements early on in a project.

This is a step that I can make detailed sketches for user interface before making the actual visual design. Mobile application screen real estate is very limited. Generally an application can have multiple actions available for users on a single screen. Introducing buttons for each action can use a lot of space. On top of the space problem buttons can also cause consistency problems on screens. So similar with other applications I used top menu bar (action bar). It is a branded top bar of the application that provides easy access to relevant actions on the screen and a shortcut to application’s home screen. The action bar can also be used to indicate user’s location in the TOGO truck service with the page title in middle section of top menu bar. I may also use dashboard that shows all available menus in one screen; however, it in many times it makes one more step to get to the final destination. I have also used page dots in the application to let users know where they are located.
UI and Visuals

Main Visual Variation

To come up with main visuals, I made many different visuals of each component and tried to match their variations to harmonize each other: logo, icons, colors of each element, shapes of each elements, layouts, etc. It is one big issue to make this application recognizable and associate it with food truck information service to users with screen visual. So, I used lanes on the road, number plate and TOGO logo, and symbolized them to make users to bring up the image of “TOGO Truck Tracking and Information Service.” Also because of its small screen, I needed to clean out UI and get rid of all visually noising factors.

Those five concepts above are mainly discussed among other main visual concepts. For the first on from left, I tried the transparency for the list menu that makes the background road lanes visible. Also made search button look alike number plate to give users visual interest and make users to remind trucks on the road. It may be an advantage with the users constantly reminded of the location of the trucks on the road; there are many visually disturbing factors. The lines in the background are overlapping with list menus which create unnecessary vertical and horizontal lines. Also because of the transparent list menu, overall visual affect looks too dark and dimmed.

Check Main Visual Variation on http://lkinus.wordpress.com/
UI and Visuals

For the second and third concept, I used white gradient for the list menu to make overall visual brighter compare to the previous one. This makes higher visibility for food truck list menus. Also I focused on the search button to give users visual interest. I simplified the number plate and gave them different colors. It works well visually, but during the peer group interview, there were a few people that did not recognize it as a search button.

For the third concept, to make a clean look and to match it with iPhone UI, I used shiny color for top logo section and search button. I also simplified the number plate and added TOGO logo for search button to symbolize TOGO truck search; Number plate, Lanes, TOGO truck search button. However if users do not recognize the search button, it is one big usability problem and will have to remove the search button.

For the forth concept, I made simple List View, didn’t add any fancy graphical element, and designed with only list view and search information. It is simple, not hard to discover other menus or functions to users but has less visual attraction. This list view also shows on second depth of service when user selected list view so it may be too simple and can cause misunderstanding of service depth.

Fifth concept is search options on first depth with Text Button. On previous concept, I showed distance and popularity menu on second depth. But on this concept I got rid of the search button under search bar and added all, distance and popularity text button to give users more searching choice instead of showing them on second depth. This makes better and easier usability.
UI and Visuals

Logo Concept

Check Logo Concept on http://lkinus.wordpress.com/

With the first visual concept created above, this is the finished logo details. There are other complicated designs, but decided to choose the logo above which is simple that stood out compared to others. I also added fire icon to symbolize cooking food. Letters “T”, “O”, “G” and “O” are symbolizing street and also two “O”s stand for truck wheels. Letter “G” also stands for search since this service is searching food trucks around users. I added subtitles to give users more information and helps users better understand what this service is. This logo shows on intro screen when users first launch the application and once users launch the application, just shows letters “T”, “O”, “G” and “O”. Because of persistence of vision, users still can imagine the full logo.
UI and Visuals

Main Color Variation

Check color variation on http://lkinus.wordpress.com/

With the visual that I currently came up with, I worked on colors on the UI. For a “Food truck tracking and information service,” I think Primary colors are good to make users imagine fresh food and accurate search service. And yellow and green color also matches with fresh food; however, I am concerned about street lane that stands for trucks on the street. So for the visual design and color usage I decided to use yellow one on the left side, which in turn the yellow and black also matches with fire logo design.
UI and Visuals

Icon Variation & Icon Set

I made up to seven icons or get sources from web for TOGO service icons. Yellow colored icons are final direction for TOGO service icons. I tried to make each icon and group them on the screen to see all icons harmonize together. This is related with some of Gestalt Theory: Grouping Laws and Seven Design Principles. Similarity and closure from Grouping Law affects to when I place this icons on same colors and shapes of buttons.

When positioning the buttons, I considered about how and where to place them. From the Grouping Law, Similarity explains that items similar in some respect tend to be grouped together. Even though all shapes have the same space in between, four squares form a group and four circles form another group. This phenomenon is caused by elements that are similar in line, shape or form. Also Closure is items are grouped together if they tend to complete some larger entity. The empty space in the middle of the top row implies a
UI and Visuals

square to complete or close the outer rectangular perimeter. The human mind tends to enclose spaces by completing contours and ignoring gaps between shapes. And for example, in TOGO truck information service, focused state of buttons and search menu and other color of positive and negative space are able to be applied by Contrast from Seven Design Principles. Contrast is the differences between figure and ground of a design. Contrast can also be used to emphasize a certain element in a design. And also other principles are applied to the service UI.

Screen Assets and Guideline

Check Assets and Guideline on http://lkinus.wordpress.com/

Screen Assets and Guideline finalize all previous documentations. On this document, it explains about each element is represented and the function
UI and Visuals

of how they navigate each other. And also it should describe all exceptional cases too. For example, if users are not in the service area and what if there is no internet connection, how the service is going to work and what is going to be on screen. Or what if there are no trucks, what kind of asset is going to be shown, etc. So it defines all elements and cases to make service clear and also make engineers understand exactly about service.

To explain about basic workflow, on the first screen there are search options as all trucks, distance and popularity. And there are recommended food truck lists. If users tab on the truck list, it goes to the selected food truck screen and shows all truck information and locations. If users tab on the search option or enter types of foods, it goes to list of food trucks or food truck on map screen. Default screen is the list; however, if users came out of map screen very last time, the map screen shows automatically. Users can set their favorite foods on the second depth of screen and when the favorite trucks are near you within 1 mile, the service alert will notify the users of their favorite trucks proximity. If users tap on settings, users can change alert setting, report inaccurate truck’s information and also register food trucks. There are more details in the documentation, but these are the main functions.
As I will be working with Mac tool, I would first need to be registered as an Apple developer. A simple free to install registration is required to test the application on the iPhone device for the IOS Developer Program. Once registered as an Apple developer, it will allow me access to download SDK for iPhone which include documentations and sample codes that are useful to make iPhone applications. And once the Objective-C is completed, I can build and run tests on the XCode simulator. It is easier to check the current model immediately while running it nearly similar to the application running on the IOS device. After checking few on the simulator, I would also need to test it on the IOS device as well to confirm. The main reason for this is to gather information from the iPhone to display the information on its device such as food truck location and current position of users, which some applications require. During this process there are many unexpected issues that occur which time consuming to match the UI and adjust functions on the IOS device. Thus, this is one of the biggest challenges for developing TOGO Truck information service along with developing all tables for the application.

To solve these problems, I need to be aware of coding of each function that
makes problems, settings of XCode and settings of IOS device. This process is to list bug errors for reporting all visual and functional bugs to match with existing possibilities that can be caused when the new shipments of models are sent from the developers.
Usability Testing

TOGO Truck Information Service Concept Testing

Objective
• Evaluate concept of TOGO Truck Information Service UI and visuals and to determine if TOGO truck service is more usable over other truck information services. Used a prototype for the test.
• Evaluate user’s response about more accurate real-time location tracking service. On account of testing with prototype
• Evaluate proposed workflow that users are able to register and login from their mobile is more useful compare with other applications that users are only able to register and login from website.
• Evaluate user’s reaction about alert services that gives interacting information for users instead of just alert on the screen.

Methodology
• Participants will be given an animation prototype to help to understand the basic workflow of TOGO food truck information service.
• Participants will be given tasks to complete, using a low-fi prototype based on concept wire frames; use prototype and compare with other applications.
• During the evaluation, participants will be given explanations to understand detailed design, general workflows and other possible cases of workflows.
• Participants will be asked to think aloud, expressing candid likes/dislikes; preferences of comparative tests will be collected, and the success (or not) of goal oriented tasks will be measured/rated

Participants
• 5-10 mixed gender: 50% male, 50% female
• Age range: 24 to 40yoa
• Use smart phone and enjoy using useful application
• Enjoy street foods
• Lives in cities with more than 5-10 tucks
• May occasionally use a food truck information application
Usability Testing

Equipment Needs

• Use a typical PC setup, i.e., monitor, PC, keyboard, mouse
• Use a smart phone installed TOGO truck information service prototype
Usability Testing

Usability test questionnaire

1. Visibility of system status
Does the TOGO Truck information service always keep you informed about what is going on with through appropriate feedback within reasonable time.

2. Match between system and the real world
Does the TOGO Truck information service speaks the users’ language, with words, phrases and concepts familiar to you, rather than system-oriented terms? Follow real-world conventions, making information appear in a natural and logical order.

3. User control and freedom
Have you chosen a function by mistake and will need a clearly marked “emergency exit” to leave the unwanted state without having to go through an extended dialogue.

4. Consistency and standards
Have you ever wondered whether different words, situations, or actions mean the same thing during using TOGO Truck information service.

5. Error prevention
Have you found and noticed, it presents you with a confirmation option before you commit to the incorrect action?
Usability Testing

6. Recognition rather than recall
Does the TOGO Truck information service minimize your memory load by making actions or options visible? You may not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate. Have you experienced any of above?

7. Flexibility and efficiency of use
TOGO Truck information service may speed up the interaction for the expert user such that the service can cater to both inexperienced and experienced users. Allow users to tailor frequent actions. Have you experience this?

8. Aesthetic and minimalist design
Does the TOGO Truck information service provides you aesthetic and simple design that makes you easier to use the service?

9. Help users recognize, diagnose, and recover from errors
In this service there were any error messages expressed to precisely indicate the problem, and constructively suggest a solution?

10. Help and documentation
Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentations. Any such information should be easy to search, focused on the user’s task, list concrete steps to be carried out, and not be too large. Have you experienced when you were using this service?
Usability Testing

I did a usability test to target users from previous research based on Jacob Nilsson’s ten Heuristics that are the general principles for user interface design. For a more accurate feedback, peer interviews were performed after the heuristic evaluation. From the cross evaluations, I found that the users are more comfortable with using the service with visual design satisfaction compare with other competing applications. They were also satisfied with flexibility and efficiency of use. Notably different from other applications, it was proven with easy steps of making accounts and editing data on the iPhone device. Also, through the explanation of detailed functions as real-time location tracking service, they showed good reaction to the concept that users are able to see moving trucks on the map and check available time on specific locations. They also showed positive response to the “favorite truck alert service.”

They were interested in more accurate services than other competitive services, easy-of-use services and services that has entertaining factors.
Lessons Learned

Throughout this thesis project there were many different approaches of researches, service planning, concept visualization, specifying documentation, prototyping, developing and user researches. During these processes, I have greatly experienced and learned about our current market situation, what kinds of devices are used and how they are used. And from service planning and usability tests I had a chance to get ideas that there are some minor factors that supports a service and affects the service that is targeting existing market.

During these processes I have experienced how market conditions and trends tend to drift, affecting service industries by approaching the market by targeting relevant users. Today’s current market, many consumers are expecting real-time based services, which some people mention it as “NOWISM”. Fairly typical cases of “NOWISM” are Twitter and Foursquare and basic concept of their services which are real-time base service and information sharing. There are many services that read this market trend to succeed their services. There are good services that are not exactly a perfect fit with the trend; however understanding the market condition to better serve the community may push more applications to a higher standard.

At the point of service planning, I realized that TOGO Truck information service is on of the last mover application on the market which may not be appealing to users; however, there are some opportunities that can be appealing to the existing market: inaccurate truck location information, need of better user interaction, no additional entertaining factors. These kinds of information from research can be last mover advantages. And after the finalization of the user test I could ascertain the factors that support while appealing to the service targeted for the existing market. Base concepts of all food truck services are similar: sharing truck information such as menu and schedule. However with mobile tracking, TOGO service is more accurate compare to other application with the entertainment of the alert service as a bonus.
Finally, as a user experience designer, when communicating with a developer, it was important to have meetings to discuss the project. However, I understand that making specifications for necessary document is important which helps to communicate with the developer immensely.
Conclusion

My goal for this project is to make better application competitive to other application in current market. Current food truck tracking applications are not quite as accurate and there are no alternatives for moving food trucks. So I approached it with mobile tracking service for moving trucks with addition of the alert service to notify users when their favorite food trucks near them. Also, because of majority of users using this service are foot bound, I have added a service to similar to Google map; showing directions and expected time. For the visual, I tried to match with theme of “Food”, “Truck”, and “Search/Tracking” service. As a result of researching competitive application, I tried to improve the visual usability.

Another goal of this project is with this process as an UX designer. I can rethink about these processes when I work on a project. It will improve the communication with engineers along with effective documentation skills and necessary documentation for smooth process.

With this research, I have learned a great deal. First, I learned more about the mobile application UI industry; difference between web application and mobile application that also means touch based platform and mouse-based platform for inputting. Also I got ideas of making UI on small screen too. During this process my graphic design skills and aesthetics for appropriate devices were greatly improved by researching all other applications.

I hope that by creating this prototype it will be a guide to make a better application with the application which would give end users more accurate and useful information and also interests using food truck service. Also hopefully it becomes a one good way to promote ideas for food trucks owners. In the future I would like to make an actual application to go forward one more step to be a better user experience designer. My interest and desire in visual, interaction design, user experience design based on all existing devices and all future devices will never end. I will keep exploring and try to make user centered design for all UIs and devices I work on.
Appendix

Schedule

Check Details on http://lkinus.wordpress.com/

2011/12/25 Finish Proposal Supporting Document
2012/01/08 Finish Treemap and Workflow
2012/01/15 Finish Wireframes and Comps
2012/01/22 Finish UI Spec (UI FREEZE)
2012/01/09 – 2012/02/05 Development
2012/01/16 – 2012/02/12 Thesis Paper (1st draft due 2012/02/06)
2012/02/20 Thesis Defense
Appendix

Deliverable Documents and Resources

Check Details on Dropbox

Check Details on http://lkinus.wordpress.com/

1. schedule1.0 - illustrator, pdf, png files
2. architecture1.0  - illustrator, pdf, png files
Appendix

3. workflow1.0 - illustrator, pdf, png files
4. wireframe1.0 - illustrator, pdf, png files
5. colorUsage1.0 - illustrator, pdf, png files
6. Visual Variatoin1.0 - illustrator, pdf, png files
7. Icons Variation1.0 - illustrator, pdf, png files
8. logo1.0 - illustrator, pdf, png files
9. ScreenAssets1.0 - illustrator, pdf, png files
10. scenariosNguideline1.0 - illustrator, pdf, png files
11. components1.0 - png files
12. intro Animation - mov files
13. application build1.0 - xcodeproj file
14. iPhone Builds test - xcodeproj file
15. togoServiceUXscenarios - mov file
Appendix

Thesis Proposal
Thesis Proposal for the Master of Computer Graphic Design Degree

Rochester Institute of Technology
College of Imaging Arts and Sciences
School of Design
Computer Graphic Design

Title: A study on a web platform graphic user interface for effective interaction with users
– focus on food truck locating information

Submitted by: Kyunghee Lee
Date: November 16, 2009

Thesis Committee Approval:

Chief Adviser: Associate Professor Chris Jackson, Computer Graphics Design

__________________________________________________________  __________
Signature of Chief Adviser  Date

Associate Adviser: Visiting Assistant Professor Shaun Foster, Computer Graphics Design

__________________________________________________________  __________
Signature of Associate Adviser  Date

Associate Adviser: Assistant Professor Hye Jin Nae, Graphic Design

__________________________________________________________  __________
Signature of Associate Adviser  Date

School of Design Chairperson Approval:

Chairperson, School of Design

__________________________________________________________  __________
Signature of Chairperson  Date
Abstract

Nowadays consumers’ are eager for instant gratification and willing to be satisfied by real-time products, services and experiences. As a result, there are tons of real-time base services are arisen. During the research, I found an information that there are more than 60 food trucks around New York City area and most of the food trucks go to the same spot at the same time of a day. However, for consumers who are willing to be satisfied by real-time service, affected by “NOWISM”, there is no certain food truck information services that fills up their demands. Also I couldn’t find any online marketing plans or publicity activities but making websites on the internet during the past several years. Through the market condition, I am assured of making an effective real-time information service is a interesting subject to approach for covering consumers and business owners needs.

In needs of real-time information services, I will create a online prototype for a food truck information service, inclusive of real-time location service. For people who are running businesses, with this service, it is one good way of informing their businesses and for consumers it will give precise information with real time interests on their real time communication devices. As a student studying graphical user interface and interaction design, I need to figure out how to make this service interesting and effective. In order to understand relation between current market and users, and also how users react on real-time location service, I’d like to do research and develop on this subject.
Background Information

Consumers’ ingrained lust for instant gratification is being satisfied by important real-time products, services and experiences (offline and online). Consumers are also feverishly contributing to the real-time content avalanche. As a result, expect brands and companies to have no choice but to finally mirror and join the ‘NOWISM’, in all its splendid chaos, realness and excitement. ‘NOWISM’ is based on personal digital devices and real time communication devices (as cell phone, iPod) and services (as twitter, Google wave). With this trend there are many web platforms and applications are out there and people share ideas and information as fast as they want.

During the research, I found an information that there are more than 60 food trucks around New York City area. And they cater foods where potential customers gather, and places of regular work or study (college campuses, office complexes, industrial parks, etc) where potential customers require regular meals or other foods. Usually most of food trucks go to same spot at the same time of the day.

According to the market condition there are needs of real-time food truck location information service for people who are running businesses and also consumers. The real-time information service is going to be one good way of introducing their businesses for food truck business owner and one good way of finding "right spot". And for customers, the service will share real-time truck location, food information, reviews, and also fun at a same time.
Scope

This project covers a variety of computer graphics design areas such as user interface design, information design, interaction design, and so on. And also there are needs of web developing skills as coding action script, JAVA, SQL, PHP, and so on. Technically, there are two issues, related with the design, such as a developing real-time information area, and managing part of site for the food truck information. (in case of making mobile application which is interlocking with website, mobile application developing skill is needed.) Also this project covers with theoretical issue: Gestalt psychology, cognitive psychology, hierarchical research, persona marketing strategy, SNC (social network communication) marketing and so on.

First, when developing a graphic user interface of real-time information area, there are other web developing skill are needed but flash or html. Because when a user inputs information on managing part of web site, the information need to be shown on the web and iPhone application. Also there is going to be two version of the managing part of site: one for general manager and on for business owners.
Once figuring out the developing issues, I need to think of how to make user interface effectively. Real time information services need better interaction design for two reasons: transferring information effectively and showing much information easily during short and limited time. Interaction with animation can improve main website areas. Interaction design is one of the main areas of computer graphic design. Adding interaction can show more possibilities to communicate information with users much more effectively than before.
Title: A study on a web platform graphic user interface for effective interaction with users – focus on food truck locating information

by Kyunghee Lee

Project Description / Methodology:

Around New York city, there are more than 60 food truck businesses and the market is getting bigger. They serve various foods and deserts that are targeting people’s picky tastes: American, Indian, Mexican, Chinese, Japanese, also coffee, ice cream, etc. As the food truck service market grows, there are many needs of informing their businesses; however, they don’t have effective marketing plan but showing menus on the web. To satisfy peoples’ need both consumer and business, real time information service is one of interesting service. For businesses owners it is one good way of informing their businesses and for consumers it gives real time interests on their real time communication devices and precise information.

Visual direction of this project contains Simplicity, information (truck location schedule) based design, visibility, readability, communication, profession, neat and so on. The map and real time truck location is going to be shown as above; simple and well recognizable. Also for the business information, to design effective user interface, two theories were selected. The Gestalt Theory is based on typical human perception. Several principles of visual perception can be used to determine readability using the Gestalt Theory Grouping Laws. Similar to the Gestalt Theory, the Seven Design Principles contribute to helping users access and comprehend content more efficiently.
Title: A study on a web platform graphic user interface for effective interaction with users – focus on food truck locating information

by Kyunghee Lee

and more effectively. These principles are the basis for good user interface and interaction design on this service.

For main color usage of this project, as this is about food business, cold color will be avoided.

For this project, making accurate tree map and flow chart is one of the important part. The managing part of web site should support the web service and it needs to be considered accurately interlocking each other. So this real-time location service should give correct information to users. To show correct information and also effective GUI, this project will make another design approach than others which have improve color systems, and interface design with its own illustration of map and site. This project is focusing on food truck shop around New York City area has densely populated area based on market research.
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by Kyunghee Lee

Procedure:

• Research: theory, design concept, design element, visual direction, UI direction
• Developing projects: milestone, workflow, wireframe, storyboard, design, coding
• Combine all outputs
• Get feedback

Limitations:

Advanced coding like professional programmers to develop web application and serve interlocking. To solve the problem I need to have a meeting with programmer to get information and solution. And Need more specific market research about food truck businesses instead of STP, SWOT analysis

Budget:

$1500 for cost of Personal Computer for developing project
$100 for research
$200 for reference books
$200 for extra budget
Total: $2000 & up to $2500

Software and Hardware Requirements:

• Macintosh Intel Core 2 Duo: 2.4GHz, 200GB Hard drive, 2GB memory
• Adobe Flash, Illustrator, Photoshop, Dreamweaver, HTML
• APM (PHP, Aphach web Server, My-SQL), etc.
Marketing Plan:

STP analysis, SWOT analysis, consumer analysis, competitor analysis, product research, risk analysis, researching community profiles, researching market information, market segmentation, trends, etc.

After completing the project for developing researches and ideas, I will represent this web application on social network site like blog, twitter, face book, cyworld, yelp and etc. (In case of developing mobile application, it will be better to approaching market.) This project is not a perfect business model yet. So I can get feedback from the communities and try to make good shape of business model. Later on, it is possible to join with food review site like yelp for making synergy effects.
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Tree Map – main web site

Tree Map – admin web site
Interlocking with server

All of user interfaces such as, Intro animation, website main, global menu (babcha, truck info, talks), and each menus that show up when cursor is on it will be designed base on goal of my thesis and by myself. Also the truck owner’s admin page and main admin page will be considered to make effective user interface.
However, I will be needed developer’s assistance for making server to transfer the packets to client and managing user’s information.
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Thumbnail of Main website

1. map, food truck, located time

2. mouse on, menus
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3. Global menus

4. Zoom in/out
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Literature Reviews:

The Design of Everyday Things
by Donald Norman
Basic Books publishing 2002

Anybody who has ever complained that "they don't make things like they used to" will immediately connect with this book. Norman's thesis is that when designers fail to understand the processes by which devices work, they create unworkable technology. Director of the Institute for Cognitive Sciences at University of California, San Diego, the author examines the psychological processes needed in operating and comprehending devices. Examples include doors you don't know whether to push or pull and VCRs you can't figure out how to program. Written in a readable, anecdotal, sometimes breezy style, the book's scholarly sophistication is almost transparent.

The Inmates Are Running the Asylum
by Alan Cooper
Sams publishing 1999

The Inmates are Running the Asylum argues that, despite appearances, business executives are simply not the ones in control of the high-tech industry. They have inadvertently put programmers and engineers in charge, leading to products and processes that waste huge amounts of money, squander customer loyalty, and erode competitive advantage. They have let the inmates run the asylum. Alan Cooper offers a provocative, insightful and entertaining explanation of how talented people continuously design bad software-based products. More importantly, he uses his own work with companies big and small to show how to harness those talents to create products that will both thrill their users and grow the bottom line.
User interface directions for the Web
Jakob Nielsen
ACM publishing 1999

The web is about to face its own Y2K crisis—one that has a great deal on common with the problems facing the mainframe industry. We know it's coming, the solution is easy in principle, but difficult in practice due to sheer mass. And, we can safely predict that much of the problem will remain unsolved by the time it hits the fan. The Web's Y2K crisis is due to the number of Web sites that will go online in the next few years. Figure 1 shows the growth of the Internet and the Web during the present decade. Since the diagram has a logarithmic y-axis, the curves represent exponential growth.

Interactive Interfaces and Worm Holes - The Next Generation of UI Designers
MaryEllen Coleman
ACM Publishing 1999

Working in teams has its challenges. What would you do if you were part of a team that included software engineers, usability professionals, managers, teachers and elementary school students? What would you do if the team had to learn about web technology and user interface design in a few short weeks and then apply that skill to creating a web page? Well, we had fun, and we achieved our goal. Join our panel discussion to hear more about an exciting project between members of IBM's S/390 team and local elementary schools from Hyde Park, New York.
Effective Designs of Graphical User Interfaces for the Web and Multimedia Pages
Alistair Dabbs
Society for Technical Communication
August 2003

Interface design provides an in-depth look into the history of interface design and the elements that comprise what we as computer users have come to recognize as an interface. Alistair Dabbs does a good job of emphasizing the reality that today’s digital interface is much more than the standard screen we see on our desktops; interface design encompasses "everything with a screen," including mobile phones, palmtop computers, and handheld devices. The author gives considerable attention to these interfaces as well as the use of animations and 3D in interface design.

Web user interface design, forgotten lessons
Software Concept Lab., Infosys Technol. Ltd
Nerurkar, U.
December, 2002

A number of prescriptions are in vogue for designing Web user interfaces, but Web site usability continues to be a serious issue. In comparison, the usability of traditional GUI applications is a couple of notches better. The key difference is in the design methods used. The author argues that improving Web design methods is possible by learning from the GUI design approach.
An evaluation of two websites with the same content but different interface styles (traditional menu-based and interactive metaphors) is described. A formative usability evaluation was carried out with heuristic assessment of aesthetics followed by post-test memory. The subjects had more problems with the metaphor-based site, but rated it more favourably on the aesthetics heuristics. There was no difference in free memory recall between the sites. The implications for website design and evaluation are discussed.

The World Wide Web is evolving from a platform for information access into a platform for interactive services. Several applications are already used through Internet and Web browsers. User interface of such an application is defined by HTML. However, HTML has its deficiencies when used as a general UI description language. Several parties have addressed this problem by defining specific UI description languages. Thus, for instance, a web browser could be used as a user interface for any application. We have revised the requirements for a UI description language from literature and evaluated two XML-based UI description formats against the requirements through use cases.
A Theoretical Framework for Web User Interface Design and Evaluation
Phing Zhang , Gisela M. Von Dran
the Hawaii International Conference on Systems Science
1999

The objective of this paper is to provide a conceptual framework and foundation for systematically investigating features in the web environment that contribute to user satisfaction with a web interface. This research uses Herzberg's motivation-hygiene theory to guide the identification of these features. Among the implications and contributions of this research are the identification of web design features that may maximize the likelihood of user satisfaction and return visits to the web site.

Web Accessibility and Human Centered User Interface
Seok, S. & Wojcik, A.
Association for the Advancement of Computing in Education
2007

Digital inclusion and web accessibility are integral parts of modern culture and, as such, have implications for social accountability. The World Wide Web Consortium (W3C) has suggested standards and guidelines regarding the inclusion of people with special needs, with an emphasis on higher accessibility and adaptability as the main goal of web design. The user interface is the place where users can interact with the information by using their minds. Users with special needs can acquire information by using a human centered user interface. This article highlights the need to investigate the relationship between cognition and user interface.
Cognitive strategies and eye movements for searching hierarchical computer displays

Proceedings of the SIGCHI conference on Human factors in computing systems
Conference on Human Factors in Computing Systems
Anthony J. Hornof, Tim Halverson

This research investigates the cognitive strategies and eye movements that people use to search for a known item in a hierarchical computer display. Computational cognitive models were built to simulate the visual-perceptual and oculomotor processing required to search hierarchical and nonhierarchical displays. Eye movement data were collected and compared on over a dozen measures with the "a priori" predictions of the models. Though it is well accepted that hierarchical layouts are easier to search than nonhierarchical layouts, the underlying cognitive basis for this design heuristic has not yet been established. This work combines cognitive modeling and eye tracking to explain this and numerous other visual design guidelines. This research also demonstrates the power of cognitive modeling for predicting, explaining, and interpreting eye movement data, and how to use eye tracking data to confirm and disconfirm modeling details.

Adobe Support Site
Adobe System Incorporated.

Provides information on the syntax and usage of supported elements in the ActionScript 3.0 language. Includes appendixes that compare key language and API changes from ActionScript 2.0 to ActionScript 3.0 and descriptions of Flash Player errors and warnings.
Title: A study on a web platform graphic user interface for effective interaction with users – focus on food truck locating information

by Kyunghee Lee

Fundamentals of Cognition
Psychology Press publishing 2007
By Michael W. Eysenck

Fundamentals of Cognition offers students an accessible and unintimidating introduction to all the key areas in the field. New research from approaches in cognitive science and cognitive neuroscience is evaluated and integrated to provide a lively, but systematic explanation of topics such as consciousness, perception, memory, learning and language.

Web Design Index 7
Pepin Press publishing 2007

The increasingly common use of fastspeed Internet connections over the past few years has considerably increased designers’ possibilities to use advanced capabilities, including larger image files. Furthermore, it is clear that web design is reaching its maturity: whereas in the past many designers were hesitant to make the change from print to web, many designers now primarily work in web design. The results of these developments can be seen in this year’s edition of our bestselling WEB DESIGN INDEX: as ever, the most accurate overview of the state of the art in web design.

WEBSCORPION.COM
Actionscript.org
http://www.actionscript.org/

This website covers tutorials, forums, articles about actionscript 3.0. People can share their coded actionscript and discuss about it.
Title: A study on a web platform graphic user interface for effective interaction with users – focus on food truck locating information

by Kyunghee Lee

Web Design Index 8
Pepin Press publishing 2008

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Modeling and Improving Selection in Cascading Pull-Down menus Using Fitts’ Law, the Steering Law and Force Fields
Conference on Human Factors in Computing Systems
Proceedings of the SIGCHI conference on Human factors in computing systems
David Ahlstrom

Selecting a menu item in a cascading pull-down menu is a frequent but time consuming and complex GUI task. This paper describes an approach aimed to support the user during selection in cascading pull-down menus when using an indirect pointing device. By enhancing such a cascading pull-down menu with "force fields", the cursor is attracted toward a certain direction, e.g. toward the right hand side within a menu item, which opens up a sub-menu, making the cursor steering task easier and faster. The experiment described here shows that the force fields can decrease selection times, on average by 18%, when a mouse, a track point, or touch pad is used as input device. The results also suggest that selection times in cascading pull-down menus can be modeled using a combination of Fitts’ law and the steering law.
Human-aided computing: utilizing implicit human processing to classify images
Conference on Human Factors in Computing Systems
Proceedings of the SIGCHI conference on Human factors in computing systems
Pradeep Shenoy, Desney S. Tan

In this paper, we present Human-Aided Computing, an approach that uses an electroencephalograph (EEG) device to measure the presence and outcomes of implicit cognitive processing, processing that users perform automatically and may not even be aware of. We describe a classification system and present results from two experiments as proof-of-concept. Results from the first experiment showed that our system could classify whether a user was looking at an image of a face or not, even when the user was not explicitly trying to make this determination. Results from the second experiment extended this to animals and inanimate object categories as well, suggesting generality beyond face recognition. We further show that we can improve classification accuracies if we show images multiple times, potentially to multiple people, attaining well above 90% classification accuracies with even just ten presentations.

Design as Applied Perception
HCI Models, Theories and Frameworks
University of New Hampshire
Colin Ware

Much of our intelligence can be broadly characterized as the ability to identify patterns, and the visual system is the most sophisticated pattern-finding mechanism that we have. Of our perceptual systems, vision dominates; it is estimated to engage 50% of the cortex, and more than 70% of all our sensory receptors are visual receptors.
Trend watching

“NOWISM” why currency is the new currency
http://trendwatching.com/

As the future is uncertain, and the past is, well, the past, instant-gratification seeking consumers are embracing the ‘now’ with more passion than ever before. And despite this trend’s seemingly ephemeral character, it is rich in solid, applicable trend examples. Dubbed ‘NOWISM’, this mega trend has, and will continue to have, a big impact on everything from your corporate culture to customer relationships to product innovation to tactical campaigns. And yet you probably only have a few minutes to spare on it so we’ve done our best to keep this Trend Briefing digestible.
Other approaches to thesis projects

• A study on iPhone application UI applying Gestalt Psychology – focusing on visual navigation service

• A study of current trend search webzine based on popular searches from portal site

• A study of process and prospect on human and computer interaction – use of storytelling design on the web

• Study on developing a mp3 player with Wii controller on personal computer – focusing on sound wave images

• Study of effective user interface on iPhone application – focusing on story board sketch application

• A study of service interaction on iPhone application – focusing on transportation time schedule viewer

• A study of GUI design and effective service interaction on iPhone application – focusing on Korean chess “Baduk”

• A study on a web platform graphic user interface for effective interaction with users – focus on food truck locating information

• A study on improving usability of interface for mobile phone – case study

• A study on educational service on multi-touch tabletop display – focus on RIT info center


Bibliography
