Terpslist

UMD’s Online Classifieds

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Abstract:

Terpslist is the University of Maryland's online forum for making one Terp's trash another Terp's treasure. The main idea behind Terpslist is to create an online environment for both UMD students and faculty to exchange goods and information with an emphasis on sustainability products. Students would use this to exchange items such as textbooks or old furniture. Both students and faculty could also share information about publicly available goods (such as links to other sites where goods can be purchased). Now students and faculty can come together to trade items and ideas on how to live greener.

Credits:

User Needs part was split equally between everyone.
First Design was discussed by everyone. Kevin and Stephanie sketched the Low-Fi Prototypes.
Task List and Questionnaire were split equally between everyone.
High-Fi Prototype was done by Mike. Revised by rest of group.
Usability Testing And Report were done by Kevin, Stephanie, and Tania.
Final Report was split up into parts. Mike did preamble, introduction, references, and compilation. Kevin did conclusion and acknowledgments. Stephanie did the report on development process. Tania did the presentation of design and final revisions.
I. Introduction

Sustainability is becoming a very hot topic in today’s society. People are becoming more aware of waste and overuse and are shifting towards being more concerned with addressing these sorts of issues. Resource scarcity, global warming, and alternative energy among many other topics have all worked their way into mainstream culture. With these topics in the forefront, people have begun to embrace the old adage “think globally, act locally.” In doing so, a new demand is being created for products, designs, and technologies which were not previously present.

Sustainability basically means that resources of any type are used in a way that the resource can be replenished at an equal or greater rate than they are being consumed. The waste hierarchy (“reduce, reuse, recycle”) is probably the best explanation of how people have reacted to the need to have sustainable lifestyles. These ideas were taken into consideration when addressing the new demand for sustainable products and technologies. Carbon calculators, for example, are becoming more widely used and popular. This technology supports the idea of sustainability because it gives people information about their energy consumption which can in turn be used to reduce the amount of energy they are consuming.

College campuses have much room for improvement in the ways of sustainability. With many students packed in a very small area, waste and consumption are both very high. College students in particular are notorious for being very wasteful and short on funds. The two seem to clash but without proper outlets most students feel like they are forced in to being wasteful despite the fact they are short on cash. Therefore, colleges are a great place to try out new developments when it comes to the area of sustainability. Each campus provides a great testing ground for specific and local sustainability solutions.

The idea behind Terpslist is to give both students and faculty of the University of Maryland an outlet to reduce wastefulness in a financially efficient way. Both students and faculty will be able to use the site to exchange goods and information to promote sustainability while also focusing on doing it for the least amount of money possible. From a sustainability perspective, Terpslist aims to reduce the at times massive amounts of waste on college campuses through reusing as much of it as possible. Plenty of old furniture, carpeting, electronics and more are just disregarded at the end of the semesters when students are moving out of their old dormitories or apartments. Most of these items can be resold but most students do not want to go through the hassle of trying to do it themselves. By providing an outlet for students and faculty to sell items, large amounts of would-be waste are reused. Saving money is always something that gets students attention so Terpslist also provides “green tips” which suggest ways of being more sustainable in day to day life which very often saves money.

The idea of Terpslist is very similar to the basic idea behind craigslist. By limiting the scope and locale, a lot of issues and problems that have to be dealt with through craigslist are eliminated. The user base is much more limited and (if verified through UMD) is more protected because only students and faculty are allowed to post. This removes security and privacy issues because all contact info is publicly available through UMD online resources. The focus of the site will also be on sustainability so there is less diversity to work with. Also, most exchanges will be done in a relatively small geographic area as opposed to craigslist which is not. This
extra specificity allows us to tailor our design to be very practical for the users’ needs as opposed to being overly generic to fit a larger amount of actions.

The Marketplace application on Facebook provides a similar service to Terpslist. Much like Terpslist, Marketplace allows Facebook users to limit their search for items, housing, jobs, etc. to a specific network they are a part of, such as the Maryland network. Terpslist varies from this model in that it would only allow people with active University accounts or e-mails to use the service. This would help narrow the scope of the service to current Maryland students and faculty, while on Facebook it is possible for alumni who may not live in the area to continue to use the Maryland Marketplace. The Facebook Marketplace does offer more services than our proposed Terpslist, including housing, jobs, and also “wanted” sections where users can post items they are looking for and other users can respond if they have them. This could be a useful feature if we have the time or for future upgrades to Terpslist because it would provide users with additional ways to find items they are looking for.²

Freecycle is a website where people can give and get stuff for free in their hometowns. Freecycle has 4609 groups with 5,843,000 users who are located all over the world. Our site, Terpslist, will be a much smaller and more compact version of Freecycle. We will have the advantage of being available only to those at the University of Maryland, which will eliminate the need for groups by location. Since the site will be used only by students and faculty, the focus of free items offered is more likely to appeal to potential Terpslist users who are UMD students and faculty.³

Swaptree is a website that allows people to trade their unwanted items for other users’ unwanted items. Terpslist will have an advantage over Swaptree because it will not require users to first list their own used stuff for trade before allowing them to search for unwanted goods. This allows the user base to find free stuff even if they are unwilling to give anything away themselves. Also, Terpslist is local to the University community so there will be no shipping costs (monetary or environmental) to worry about.⁴

_Sustainable Interaction Design: Invention & Disposal, Renewal & Reuse_ focuses on sustainability as a central focus in HCI when designing any new product or system. He outlines a series of principles which all new designs should take into consideration.⁵

_The Dynamics of Mass Online Marketplaces: A Case Study of an Online Auction_ is a case study of a massive scale online auction marketplace. Its main focus is to get insights on the design of the marketplace, and online marketplaces as a whole. This article can help us in our design of Terpslist by indicating several considerations and implications that our design may have on the usability of our project.⁶

_Sustainable Millennials: Attitudes towards Sustainability and the Material Effects of Interactive Technologies_ expands upon the Blevis article published the year previous. In order to gather data for this paper, 435 undergraduate students were polled on issues of sustainability.

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¹ http://www.craigslist.org
² http://www.facebook.com
³ http://www.freecycle.org
⁴ http://www.swaptree.com
These results stress the principles which were developed in the previous article and show how much of a concern these sort of issues are to users.7

In Reduce, Reuse, Rejoice, Jennifer Hattam discusses updating the way we think about recycling. She describes ways to improve recycling efforts and make them more compatible with our fast paced, tech heavy lifestyles; including online forums and e-mail groups that find new uses for old goods.8

Do Social Networks Improve e-Commerce? A Study on Social Marketplaces studies the Overstock auction website and investigates whether social interaction effects business interactions on e-commerce websites. Because Terpslist caters to faculty and students, many of whom are familiar with social networking websites such as Facebook, this article may provide insight into how to design Terpslist to cater to these groups.9

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II. Presentation of Design

Terpslist is a website that provides basic e-commerce services to the students and employees of the University of Maryland. It is an online classifieds and recycling center. Therefore the basic choices of available options on the site are similar to other such sites such as http://www.freecycle.org/. There is the ability to browse all listings, post an item for pickup, search for specific items, and of course provide feedback and ask for help. Below is the basic transition diagram for Terpslist along with the insert diagram for the help sections.

Terpslist is a website designed for University of Maryland students and faculty and therefore the university’s website standards are the main design inspiration. The university provides very specific guidelines for the layout and feel of all university web pages, an overview of which can be found at http://www.umd.edu/web_guidelines/. These standards dictated the basic format, all of the color choices and all choices involving text style, size and color for displays, label and buttons.
The first and last screen that the user encounters is the login screen. The page is very plain and self explanatory. The user enters their University Directory ID and password, hits the login button and is then directed to the Terpslist home page.

3: Login Screen
The Tersplist home page has a short welcome message that explains the site's basic features. From the welcome screen, the user can access any of the main pages (or main features) of the site by simply clicking on the appropriate link located on the menu bar across the top of the page. The location and style of the menu bar as well as the color, size, and font choice for the button labels were chosen so that they adhered to UMD’s web standards. The menu bar is available on all main pages.

Located across the bottom of the screen is a yellow bar which contains helpful tips for recycling, reducing waste and being green in general. The bar’s location and style stay the same but the tips change from one screen to the next.

Welcome to Tersplist, UMD's Online Classifieds!
An online store where a Terp can save green while being green.

Here at Tersplist, you can browse all of the listings, search for specific listings by keyword or location, or submit a listing of your own. Just click on one of the tabs above to begin.

Not sure where to begin? Check our online help guide for hints on getting started.

4: Home/Welcome Screen
The first of the main pages is the browse page. The browse screen allows users to view all of the available listings. The listings are displayed four at a time with a map which shows where the items are located. There is the ability to sort the advertisements by the user, item description, price, date available or distance just by simply clicking on that heading in the display grid. The default is by date which was chosen because it was most popular. There is the ability to see the next or the previous four results as needed. For the sake of continuity, the results of a search are also displayed in the same manner. The user can hover over any results field to see the optional photo of that item. The user can single click on any of the specific results fields to view that listing in full. From the view full listing page the user can either view all items by a user by hitting the view all posts by this user button or they may contact the item’s poster by hitting the contact user button which leads to a simple email interface. The form tells the user who they are contacting and about which item so there is no need to remember information from one screen to the next. Also, the user submits their inquiry without ever being provided the other user’s email addresses to avoid security issues. After the inquiry has been submitted, the user is given confirmation and then redirected to the view full listing page.

5: Browse Listings Screen
6: Browse Ad Preview Screen

7: Contact User Screen
Your e-mail has been successfully sent. If the contacted user responds, it will be sent to your listed e-mail address.

You will return to the item listing in 5 seconds.

8: Successful Contact Screen
The next of the main pages is the search listings page. From this screen, the user has the ability to search the ads for specific items or for a specific location. After the mandatory fields which are marked by red asterisks are filled in, the user hits the search button to see the results. As mentioned previously, the results of the search inquiry are displayed in an identical manner as the browse listings section. The user can single click any results field to view the full item listing screen. From here, the user can choose to view all posts by that user, contact the user about their item or to return to the search results page by hitting the appropriate button. Notice that the view full listings screen is identical to that reached through the browse feature except for the choice to return to the search results. This enhances the continuity of design as well as lowers number of new screens the user must learn.

9: Search Screen
10: Search Ad Preview Screen

Posted by User: Taliban

Street Address:
4211 Hahnah Rd
College Park, MD 20740

Available Starting: Fri Nov 14 20:00:00 GMT-0500 2000

The price of the following is $30.00
Description:
weight, keyboard

GREEN TIPS: Did you know taking shorter hot showers can save energy?
The next menu item is the submit listing feature. This is a simple form where the user fills out the information and then submits it. All fields that are required are highlighted with red asterisks. All other fields are optional. Once the form is complete, the user hits the submit button to see a preview of their posting and complete submission. If any required fields are missing, an error box pops up and tells the user which of the fields still need to be filled in.

11: Submit Listing Screen
12: Submission Errors Screen
Feedback is the next feature offered on the main menu bar. The feedback page is a simple form much like the other screens. The user just enters their comments in the box provided and then hits submit. The user is redirected to the home page after a thank you message appears. This is to let the user know that their input was not only received, but appreciated as well.

13: Provide Feedback Screen
Thank you for your feedback!

You will return to the home page momentarily.

14: Thank You Screen
The final feature of the Terpslist website is the help section. This is the overview of the help section. Located on the left are the help topic choices. The user just clicks on the help topic that interests them and that information appears in the box to the right of the help topics menu. Currently the five choices from top down are Posting an Ad, Searching for an Ad, Giving Feedback, Contacting a User, and Navigation. Below are the screen shots for each of these help sections.

15: Help Overview Screen
16: Posting an Ad Help Screen

Posting an Item:
The post page is where you can post an Advertisement for your own items that you will be leaving out on the street. Simply fill in the form, and submit! It's as easy as that. Let's take a look at the fields in the post form:

- **Address Field:** This is where you type in the street address of where you will be leaving the item (e.g. "4230 Knox Road").
- **City Field:** This is where you type in the city of the address (e.g. "College Park").
- **State Combo Box:** This is where you select the state abbreviation for the address (e.g. "MD" for Maryland).
- **ZIP Field:** This is where you enter the zip code of the address (e.g. "20742").

The Date and Time selectors are to let people know when your junk is going to start being available! To use the Date selector, simply use the arrows at the to select the Month (c, m, y), and then click the box for the specific day. Use the Time selectors to approximate the time of day you estimate it will be available on that day.

The Photo field is optional, but if you have a photo of your junk handy, go ahead and upload it! That way others browsing for items can take a look at exactly what they're getting.

Description Field: This is where you can provide a list of items that you will be leaving. Keeping it short and concise will make it easier for others to find your stuff!

That's all there is to it! Have fun posting items, and if you have any trouble, be sure to let us know on our feedback page!

**GREEN TIPS:** The next time you printer runs out of ink, consider buying refillable ink cartridges to help reduce waste.

17: Searching For an Ad Help Screen

Search for an Item:
The search page is where you can search for Advertisements posted by others. Simply fill out the form, and search! Then you can browse the results. Let's take a look at the fields in the search form:

- **Address Field:** This is where you type in the street address you are at (e.g. "4230 Knox Road"). This will help you find items that are close to you, as we will calculate the distance to the items we find during the search!
- **City Field:** This is where you type in the city of the address (e.g. "College Park").
- **State Combo Box:** This is where you select the state abbreviation for the address (e.g. "MD" for Maryland).
- **ZIP Field:** This is where you enter the zip code of the address (e.g. "20742").

**Keywords Field:** This is where you can list specific items that you are looking for (e.g. "chair, table"). Keywords and phrases should be comma-separated, and search results will try to match all of them.

The Date selector filters by the first day of availability items are available. To use the Date selector, simply use the arrows at the to select the Month (c, m, y), and then click the box for the specific day. Use the Time Span selector to control the window of availability (e.g. a 3 day timespan will only return items available on the Date you select, whereas a 7 day timespan will return all items becoming available in the week starting on the Date you select).

Clicking the **Search** button will show the results of your query. Results are displayed 4 at a time. The map shows the location of the items currently being viewed. To look at a particular item, either double-click the row in the table, or click the corresponding marker on the map. This will take you to the post for that item.

**GREEN TIPS:** The next time you printer runs out of ink, consider buying refillable ink cartridges to help reduce waste.
18: Giving Feedback Help Screen

19: Contacting a User Help Screen
**20: Navigation Help Screen**

Naviagation:
Having trouble getting around? What you need to do is right above this page. The main way to navigate this site is through the links on the left hand side of the page. Post will take you to a page where you can post an item on the site. Search will take you to a search query form. Help gets you here, and Feedback takes you to a page where you can manage your account. Once you have clicked a button on the main panel for the task you want to do, use the buttons within the body of the page to help you complete a process. If at any time you are having trouble with a process, clicking the “Help” button will take you back here, with all the information for that process displayed.
III. Report On Development Process

Low-Fidelity Screen Shots:

We had two low-fidelity prototypes that we created rough sketches for before deciding on our final interface. Our first design was based off of craigslist with a very basic, textual interface. Our other interface was aimed at integrating Terpslist with the other websites of University of Maryland by maintaining the same look-and-feel.

![Prototype of Text-Based Interface: Login Screen](image-url)
22: Prototype of Text-Based Interface: Browse Listings Screen

23: Prototype of UMD Interface: Browse Listings Screen
Process for Arriving at High-Fidelity Prototype:

Our team arrived at our high-fidelity prototype by first selecting the design we liked best from our low-fidelity prototypes. We weighed the pros and cons of each of our two low-fidelity prototypes, and ultimately chose the prototype that would help Terpslist fit in with the rest of the University of Maryland’s websites.

While we did like the craigslist-feel to our more text-based prototype, we ultimately decided that because Terpslist would hopefully be incorporated as an official University of Maryland service, it would be best to design it to fit with the University’s design standards. One of our goals for Terpslist was to make it a safe environment to sell or trade used goods between people affiliated with the University of Maryland. Our craigslist approach may have initially been a benefit to and attracted those who had used craigslist before, we decided that by integrating Terpslist into the University of Maryland websites using a similar layout, we could instill the trust that Terpslist was safe to use.

We also decided on the more graphical interface because the functionality of our project is very simple and text-based as it is, so we could afford to include some more graphics than the craigslist approach.

Before we began our final high-fidelity prototype, we wanted to have a more detailed lower-fidelity prototype to get a closer idea of what it would look like.
This is still a lower quality prototype than our high-fidelity prototype, but it was a quick mockup we wanted to do in order to have a better idea of what we were aiming for and how to actually go about doing it. On the bottom we also decided to include a “Green Tips” bar to help integrate our project more with the sustainability concept. We knew from the start that as a person browsed the website we wanted to provide some basic energy or waste saving tips at the bottom that would rotate as they moved from page to page.

**Developing the High-Fidelity Prototype:**

We chose Adobe Flash as our tool for developing our high-fidelity prototype due to time constraints and the existence of some components we could use in our project. Because we had a lot of similar functionality to our class’s Flash project, we had already been working with and become familiar with how to use flash with databases and the different components. We wanted to be able to complete a fully-functioning prototype to perform our usability tests on and make drastic changes too quickly if necessary. If we were to develop our high-fidelity prototype into an actual service, we would make it an actual website.

The graphics for our user interface were developed using Adobe Photoshop 7.0, then exported to Flash to create the header and button images, including custom buttons to add a more unique feel to our website.
Usability Testing Process:

For our usability tests, we first developed our high-fidelity prototype and tested it ourselves. After we felt that we had done a reasonable job with our prototype, we began our usability tests. We each tested several subjects and attempted to test people of different technical backgrounds and e-commerce experience levels. The following are our pre/post-test questionnaires and our task lists, followed by a summary of our testing process findings.

Pre-Test Questionnaire:

1. Age: _____________

   Class Standing:  __ Freshman
                   __ Sophomore
                   __ Junior
                   __ Senior
                   __ Faculty
                   __ Other: ______________________________________

   Gender:  __ Male
            __ Female

2. Number of hours of Internet use per week: __________________________

3. What E-Commerce websites have you used in the past? (Check all that apply)
   __ Craigslist  __ Freecycle
   __ Amazon     __ EBay
   __ Facebook Market  __ Other: ________________________

4. How often do you use E-Commerce Websites?
   __ Once a week     __ Several times per week
   __ Once a month   __ Several times per month
   __ Once per year  __ Never
5. What types of items do you recycle? (Check all that apply)

__ Plastic bags     __ Cardboard
__ Plastic bottles   __ Paper/newspapers
__ Glass bottles     __ Batteries
__ Cans             __ Ink cartridges
__ Other: ___________________________________________________

Test Subject Scenarios:

1. Student Scenario: You are a UMD student that just moved into an unfurnished apartment from the on-campus dormitories. You have procured some items during your stay in the dorms that you no longer need but aren't ready for the trash. Also, you are looking to obtain some new but used furnishings for your apartment. You will use the Terpslist website in order to complete your tasks.

2. Faculty Scenario: You are a UMD faculty member and after many years in a small office in the basement, you are moving to a much larger room with a view. You want to relieve yourself of any furnishings that remind you of that dingy old office. Also, you would like to obtain some new but used furnishings for your new office. You will use the Terpslist website in order to complete your tasks.

Task List:

1. Login using your university ID and password.

2. You no longer need or want the brown chair from your room. Since the chair is in good condition, you would like to sell it for $20. Post the item, making sure to include an item description, price and alternate email address (use test@test.com for this task).

3. Now that you have made room by getting rid of your chair, it is time to search for a new couch. Choose to search the site by keyword. Browse all of the couches available and choose the green one that is offered for free. Contact the user who posted the item and let them know you are interested in their couch.

4. Next you would like to browse the site for any items that you may need but can't think of specifically. Browse until you locate an ad for a used coffee maker that interests you (the first coffee maker located is fine for this task). Contact the user who posted the ad let them know you are interested.
5. While on Terpslist you think of a new feature you think would be a nice addition to the website. Send your new idea to the Terpslist website using the Feedback form.

6. Now that you have taken care of your shopping needs, it is time to logout.

**Post-Test Questionnaire:**

1. I was able to complete the given tasks with ease.
   
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2. I felt posting an item took the appropriate amount of time.
   
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3. I was easily able to search for and find a specific item.
   
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4. I was pleased with the layout of the browsing feature.
   
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5. It was easy to interact with users whose postings I was interested in.
   
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6. If used, I felt the help page was laid out in a useful and easy to use manner.
   
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7. I would visit/ use Terpslist again:
   
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8. Please elaborate on any score from above that is below 5.

9. What was your favorite part of the website?

10. What was your least favorite part of the website?

11. Do you have any other feedback?
Usability Testing Results:

USABILITY TEST OBSERVATIONS
(See Appendix 1)

USABILITY TEST RESULTS

22: Average Results for Usability Test Questions

23: Average Results by Gender
REPORT ON POST-TEST QUESTIONNAIRE RESULTS

The key issues with our prototype that were identified by our users, along with their priority of importance in fixing (1-5, 5 being very important) and level of difficulty in fixing (1-5, 5 being most time consuming) are below. They are separated into functionality issues and actual bugs in the prototype:

**Functionality Issues:**

1. **Lack of instructions** – This issue is in regards to the lack of instructional text that is actually in each section. While we do have a Help section, there is a lack of information in how to do things throughout the prototype, such as instructing a user to double-click for a full description of an item, or that the login was their University ID and Password.

   - LEVEL OF IMPORTANCE: 3
   - LEVEL OF DIFFICULTY: 2

2. **Enter button working incorrectly** - When a user tries to login from the login screen, hitting the “Enter” key on their keyboard does not actually log them in. Many users commented on how this should work because it is a functionality most users have become accustomed to.

   - LEVEL OF IMPORTANCE: 5
   - LEVEL OF DIFFICULTY: 3

3. **Searching by keyword with a date** – The search by keyword asks the user to enter a date and time-span to search by. This was difficult for many users (as indicated by both number 3 in the graphs and from feedback), particularly because our fake listings to allow for the usability testing were posted in the past, so most users did not know how to find what they were looking for. A good fix for this would be to either allow for an optional date range, or to simply eliminate the date range altogether and return all results in chronological order, with the most recent listings at the top of the results.

   - LEVEL OF IMPORTANCE: 5
   - LEVEL OF DIFFICULTY: 5

4. **Double-clicking a listing to see a full result** – It was difficult for the majority of users to figure out how to see a full description of a search result by double-clicking. Most users attempted to simply click the listing, and were confused when they did not get the result they expected. A good fix would be to both create a “View Full Description” button as well, and keep the double-clicking functionality, or to allow a single-click to take them to the full description.

   - LEVEL OF IMPORTANCE: 5
   - LEVEL OF DIFFICULTY: 2
5. **Search by category** – This feature was originally in our first plans for our prototype, however due to time constraints it was omitted. While it is not totally necessary, several users pointed out that it would allow for easier searching or at least searching in the same genre of item they were interested in.

   LEVEL OF IMPORTANCE: 2
   LEVEL OF DIFFICULTY: 5

6. **Make logout text stand out more** – Currently the logout link is at the top right of the page in plain text, although it is yellow to make it stand out a bit. Several users commented that it was harder to notice as compared to the menu buttons; however most users were able to find it with ease.

   LEVEL OF IMPORTANCE: 1
   LEVEL OF DIFFICULTY: 1

7. **Allow scrolling down results** – One user indicated that he would really like to be able to select a listing from the data table and then use the down arrow key to scroll through listings, and at first did not realize there was a “Next” button. This may be a cool feature to have and allow users to discover on their own as they become more accustomed to the site.

   LEVEL OF IMPORTANCE: 1
   LEVEL OF DIFFICULTY: 5

8. **Tabbing through form not working** - Many users tried to tab through the forms while filling them out. For the most part this works, however in the listing submission form the tabbing is out of order.

   LEVEL OF IMPORTANCE: 5
   LEVEL OF DIFFICULTY: 1

**Bugs Encountered:**

The following are bugs in our prototype that must be corrected and were discovered during usability testing.

1. When navigating to the Browse Listings screen from search results, the item listing is not updated and the “Browse Listing” screen continues to display the previous search results. In order to get around it you must click off of the item listings screen then go back to Browse.

   LEVEL OF IMPORTANCE: 5
   LEVEL OF DIFFICULTY: 3
2. When a user clicks on the “Contact User About This Item” button, it seems to sometimes add that item again to the listings under the current user (So if Joe tried to contact Ricky about a coffee maker, it’s then added as being offered by Joe as well).

   LEVEL OF IMPORTANCE: 5
   LEVEL OF DIFFICULTY: 4

3. “Geocoding failed” message appears and should be caught.

   LEVEL OF IMPORTANCE: 5
   LEVEL OF DIFFICULTY: 1

IV. Conclusions

Throughout the semester, our project underwent quite a few changes, all for the better, and in the end we found we had a very effective design for our project idea. Our low-fidelity prototypes modeled a few different presentations. In the end, we chose the one that most closely matched the University of Maryland website (http://www.umd.edu) and modified it to be even more consistent with the University of Maryland “web guidelines” as stated on the UMD help page (http://www.umd.edu/web_guidelines/). We feel our end result is very consistent with the University’s branding scheme, and we are pleased with it.

To keep the emphasis of our site on sustainability, we also added a “Green Tips” banner to the bottom of our site that continuously displays little tidbits for college students about ways to live greener. This was not in our original design, but we feel it is a simple, yet great addition to our site that displays useful information and also reminds our users that by using the Terpslist service, they are helping the environment by reducing waste.

It is important to note that the final presentation of our project, as outlined in this report, is not complete. It is merely as complete as we could make it given the time constraints of a single academic semester. Should work continue on this project, there are some potential ideas for further development that we had in mind.

First, the login page we implemented is simply a mock up of what we envisioned. It does not perform any actual authorization or account loading. Before this website could be deployed, this would have to be fully implemented. The University of Maryland provides an API and guidelines for adding their login protocol to any website. For more information on this, visit (https://login.umd.edu/developer.html).

Another major task that would have to be implemented before making this site live would be to implement a non-volatile database. Currently, for prototyping purposes, the database is created during every build, and some sample items are added. The database stores items as objects at runtime that are lost when the Flash video ends. A more sophisticated database, such as MySQL, that stores advertisements on the server would have to be implemented. Also, the website would have to handle transactions and parallel access to the database, as it would have to serve more than one request at a time.

After the above changes were made to make our project more “deployable,” the next task would be to launch the site for public use. This would involve registering an available URL (or possibly obtaining a sub-domain from the University of Maryland for use). Next would be finding a hosting service to provide a server to host our website (again, the University may be
able to assist with this). Then, our Flash video would simply have to be published and uploaded with the necessary files to a web server.

For those that may build upon the work of our group and the ideas presented in this document, we would like to make the following recommendations. First, know the target audience of the project. It is mainly meant for college students at a large university (specifically the University of Maryland, although with some minor visual changes it could be altered to suit other schools). Developing for this audience was easy for our group as we are all members of this community, but it may require more research for future developers that may not be familiar with the habits of this group.

Next, any ideas for major design or feature changes should be vetted by a group of test subjects before being deployed live. During our development process, we received our most effective feedback from our usability testing. Don’t assume anything about your design – test it. Lastly, use the Eight Golden Rules of interface design, outlined in Designing the User Interface by Ben Shneiderman, to drive your development. If you want to add a feature, first think and plan how it will fit into the existing interface. There are several additional features and functionalities that could be added to the Terpslist service, but unless the interface is optimized based on the Eight Golden Rules, it could quickly become cluttered and less effective overall. We feel that a huge draw to this site will be its simplicity of use, and we believe that this should be preserved with future development.

V. Acknowledgements and References

Our group would like to thank everyone who made this project possible. First, thanks to Dr. Ben Shneiderman, our professor, for his interest in this topic and for his expertise and guidance. Also, thanks to his teaching assistant, Nir Peer, for teaching us the technical aspects of Flash that made implementing our design possible. Lastly, we would like to thank all of our family and friends who gave us feedback on our project throughout the semester, including those who participated in our usability study. Without the support of all these individuals, we could not have achieved the same result.

Reference List:

i. http://www.craigslist.org
ii. http://www.facebook.com
iii. http://www.freecycle.org


VI. Appendices

Appendix 1: Usability Test Observations

A 21-year-old male senior Finance major at the University of Maryland who uses E-commerce websites at least once a week.

This test subject did fairly well with the usability test. He was able to successfully complete each task assigned, however there were some cases where he was unable to do so quickly due to issues with our interface and design. The first issue he ran into was when he was trying to login. After entering his username and password, he tried to hit the “Enter” key on his keyboard to login, but this functionality was not enabled in our prototype. As a result, the user made a comment about how the “Enter” key should allow him to login then proceeded to click the “Enter” button on the prototype. As he entered the information to submit a new listing, the user commented that, “things are going smoothly”, however when he came to the portion of the form to enter the current date and time, he commented that this should be done automatically for him. He also said, “cool, you can upload a picture” when he noticed our image upload section. The user also pointed out that the red marker indicating a required field next to the “Description of Item” label was not aligned correctly.

After the user posted his listing, he attempted to search for a couch using our search field. He was unsuccessful in locating any listings because of our date and time span search feature, and I eventually had to help him because the items had been entered at a previous date that he would not know about unless he tried browsing. Aside from this minor glitch, he was able to find the couch in the search results. The user knew that he had to contact the poster of the couch, but when he clicked on the row of the search results table with the couch he expected the description to pop up, but it didn’t. It took him a bit of time to realize that he had to double-click to see the full description, which he mentioned was not obvious. After he sent an e-mail to the user, he commented that the text telling him that he was successful was “too large.”

Finally, when trying to search for the used coffee maker using the browse feature, he commented that he “should be able to scroll down and not click a next button to see more listings” in the table.
Comments (from questions on post-test):
8. None
9. That it was very straight-forward and easy to use.
10. None
11. Times New Roman is lame and boring on the front page. ‘Recycling’ in the subtitle implies the goods are being thrown out. The date and time of postings should be automatic. The distance to get to the location of the items should be rounded to the 2\(^{nd}\) decimal point.

A 21-year-old female Mechanical Engineer senior at the University of Maryland who rarely uses the Internet to make purchases.

This test subject ran into the same issue with the login screen and attempting to hit the “Enter” key on her keyboard as the other users. After the user read her next task (to submit a new listing for a brown chair), she first accessed the help screen and read the appropriate help text for how to submit a post. She then accessed the listing submission form and began to fill it out. This user, when filling out the form, used the tab key as her primary means for moving through the form. She encountered one issue where she tabbed from the “Zip Code” text box and it took her to the “Photo” field rather than the “Price” field, but she was able to easily recover from this error.

When searching for the couch, she also encountered the date searching issue and commented on how selecting the date to search for is not necessary. Once she did find the couch, she also attempted to single-click the table to access the item. It seems that the user only discovered the double-click requirement by repeatedly trying to click the item, as she later commented that she “would have liked a “Select” button to easily go to the item’s description.

When the user tried to find the used coffee maker using the browse listing, she instead used the search by keyword form again. After she found the coffee maker, she then noticed that there is a “Browse Listings” button and commented that she had not noticed it until just then.

The user was able to use the Feedback form with ease, and also to quickly locate the “Logout” link.

Comments (from questions on post-test):
8. None
9. I thought the layout looked very nice and was user friendly.
10. The searching was a little difficult with the date option. It might also be useful to include a “Select” key when searching an item in addition to being able to double click.
11. Maybe combine browse all items & search items tabs together. I did not notice the option of browsing at all until after I searched for something specific.

A 21-year-old female senior Education major at the University of Maryland who uses E-commerce websites from time to time.

This user immediately ran into the same “Enter” key issue with logging in as the other users. She noticed right away that simply hitting the key did not work and knew to hit the button though.

When submitting a new listing, she attempted to type a $ symbol in the Price field, however she was prevented from doing so by the restrictions set on the text field. She did not seem disturbed by it and continued filling out the form. When she entered the form, a trace error window appeared with the text “Geocoding failure,” which concerned the user as she felt she had
done something wrong, when in reality it was a failure in our program to catch the error and handle it correctly.

When searching for the couch, the user again encountered the date searching error and after some time and a little guidance was able to find the search results. She also did not know how to access the item’s description at first. After clicking several times on the item, she finally double-clicked on it and it appeared, and she commented, “I have no idea how I got here.”

When the user used the Browse Listings tab to find the used coffee maker, she quickly knew how to go from page to page of the listings using the “Next” and “Previous” buttons to find the item she was looking for. She was able to send an e-mail to the user who posted the coffee maker easily, and also to enter Feedback and Logout easily.

Comments (from questions on post-test):
8. It was easy to see the postings but I would have liked to have it done by categories (like a way to see only electronics, couches, etc.) to make it easier.
9. It was easy to use and could search for whatever I needed.
10. Lack of directions on the page, didn’t know to double click.
11. None

A 21-year-old male senior majoring in Communications at the University of Maryland who is online a lot but uses e-commerce very seldom.

This user was tripped up at the very beginning of the usability test. Having not read the task list carefully, he did not know how to login because he said he “did not have an account.” He figured out to use his UID and password, but commented that it should specify on the site to use that, as he was looking for a “first time user” link.

After logging in, things went a bit more smoothly, as he had no trouble posting an ad. After that, he quickly found the “Search” link for the next task, commenting that the navigation bar was “nice.” He seemed a bit confused when first confronted with the search interface, but was able to complete the search query without error.

Once the search gave back results, he was stuck on the results page for a quite a while before figuring out how to view a specific listing. (Attempted single click several times, and pressing “enter” after selecting an item. Eventually double-clicked.)

He was able to contact the user via email, as well as contact the site via the feedback page. Logging out took him a second to find the link, but was not problematic. He did comment that the logout message seemed “cheap” in contrast to the rest of the site, and recommended that it be “pepped up” to match the tone of the rest of the site.

A 20-year-old male senior marketing major at the University of Maryland who is a frequent user of e-commerce.

This user was excited about the idea behind Terpslist, commenting that he would use such a service often to get rid of and find items.

At the login page, the user attempted to submit the form by pressing “enter.” He quickly corrected this by clicking the login button. Posting was ok; his only complaint was that the tabbing did not work perfectly, as he was testing our prototype on a laptop with a poor tracking pad, he did not like having to use the pointer (a USB mouse was provided for later subjects, but this feedback was noted).
Searching was easy. On the search results pages for the couches, he was able to figure out the double-click method of selecting a single item on his second try! (Most other subjects had trouble with this.) Contacting the user was no trouble for this user. Searching for the coffee maker, the user experienced no trouble, and commented positively, “I could see myself browsing listings for hours if this were a real site.”

In the feedback portion of the usability test, the user commented that it would be nice to let people post services on the site in addition to items, so people could be hired for one-time jobs.

Logging out was easy for the user, once they found the link. They said it wouldn’t be a bad idea to make it stand out more since all the other buttons were so big and attention grabbing.

A 21-year-old female junior at the University of Maryland who shops online about once a month.

This user was quick to comment how nice the interface looked. She said the login page seemed “professional.” She enjoyed the graphics and said it looked like an official University of Maryland site.

Logging in went smoothly. She quickly found the “Post” page, and filled out the form. She attempted to use the tab key to navigate the form, and met unexpected functionality, which she was easily able to correct with the mouse. (Interestingly enough, from that point forward she used the mouse for all navigation.) She liked the picture option for posting an item.

Searching was a bit of a struggle. The test subject commented at one point that “the instructions were unclear” when she was having difficulty. She first misspelled “couch” in her keyword search and was confused when there were no results. When her error was pointed out, she said there should be an easy way to correct typos, like Google.

After the first search, finding the coffee maker went much smoother. Feedback and logout were also easy for the subject. In the end she said “Great job! Really nice looking, maybe just make searching easier.”

A 31 year old alumni who is interested in recycling and saving money.

The subject found the posting interface easy to use. She found the search by keyword page to be confusing. While she found the help page to be useful, she was still unable to locate the sofa. She then realized it was a date related issue and commented that the date portion was unnecessary and confusing. While browsing, the subject asked what the distance measured and said it was unclear. The user had no issues with locating the ad for a desk and then contacting the poster about the item. The subject suggested the ability to browse by category. The user enjoyed the overall layout and functionality of the Terpslist site. The total time of the test was 14:53 (min: sec).

Comments (from questions on post-test):
8. It was confusing knowing what dates to use when searching for item.
9. User friendly- easy to post and communicate between seller and buyer.
10. Search by item.
11. Looked professional.

35 year old alumni who enjoys using ecommerce websites and participating in local recycling programs on a regular basis.

The subject began by commenting that the login page did not say it required a University
ID and password and was therefore ambiguous. The posting interface was easy to use. The subject was unable to locate the green sofa after three attempts. She commented that the date and time span was unnecessary. The user did not realize that one could double click the listing to get to a contact page but was easily able to complete the task once told. The user suggested a search by category portion and the ability to browse more than four ads at one time. The subject was impressed with Terpslist’s layout and commented that the site looks like the current UMD websites. The total time of the test was 18:32 (min: sec).

Comments (from questions on post-test):
8. I was unable to find green, free sofa.
10. Did not like date portion of search page. Did not know one could double click posting to get more information.
11. I would enjoy a search by category, ability to browse more ads at once. Looked just like current UMD websites.

30 year old alumni who recycles regularly and is a promoter of community recycling programs. The subject encountered no difficulties signing in or posting an item to the interface. The subject found searching for a sofa difficult. The problem arose when he used the keyword “sofa” but the ad used the keyword “couch.” The subject had no problems locating the desk for sale but did not realize that double clicking would lead to the contact poster page. The subject had no suggestions for new features at this time. The user was impressed by the overall layout of the site but suggested that the logout button be clearer. Also, the subject felt that the green tips were useful but there should be more of them and they should be more obvious. The total time of the test was 23:45 (min: sec).

Comments (from questions on post-test):
8. NA
9. Easy to post item.
10. Did not understand could double click a listing to get to contact screen.
11. Professional. Green Tips should be larger- more obvious.