



# Designing a Replacement Web Portal for DISC, a Student Club at Arizona State University

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**Executive Summary**

The existing website for Arizona State University's Department of Information Systems Club (DISC) was originally designed by a student member who graduated two years ago and subsequently moved on in their career. The DISC website (http://asudisc.org) was written with the Ruby on Rails coding language and has proven to be difficult to maintain and update. In addition, the site has been hosted under the personal account of the original designer, who was interested in being relieved of the burden. Since none of the DISC members were familiar with Ruby on Rails, the leadership of the organization expressed interest in re-coding the site in something most students would have been exposed to in their coursework. Along with the platform change, there were a number of criteria important to DISC, and other 'wish list' items. In addition to the standard requirements of designing a website, including a web server and standard editing tools, some additional requirements were imposed on the project: GitHub (https://github.com), the web-based repository, was a mandatory requirement of our project to manage and notate the progress. With GitHub, each milestone was noted in a ticket system left to track the progression of the semester long project. Waffle (https://waffle.io) was used as our online KanBan board to track individual milestones, or 'stories' during the development process. WordPress (https://wordpress.com), the website content management system, was selected as the foundation of the DISC project. All of the existing pages from the original website were recreated. The WordPress system enables various plugins to be implemented, allowing for many of the pages we were duplicating to mimic the function of the original DISC website. Some changes we implemented included reducing the number of page links on the main menu and extending the functionality of the registration page by adding additional fields. The events page was altered as well, making it more accessible and user friendly. From the home page, a swivel

feature was added to redirect the user to whatever page they wanted to access. One request from the DISC president was to make the website theme a little more ASU-oriented by providing university colors that were not necessarily used as much on the original site. WordPress has extensive ‘skinning’ capability, allowing us to choose a design theme that provided some of the original look and feel but with many enhancements.

**Team Members**

**Han Kim** is currently a student at the W. P. Carey School of Business at Arizona State University, and will graduate with a Bachelor of Science degree in Computer Information Systems in December 2015. Professional experiences include working at the purchasing and receiving department of the Chemistry department at ASU, a marketing internship at IBM Korea for inside sales, and a part-time translator for English to Korean and vice versa. He is eager to get into an IT career in a professional sports field and was recently married in June 2015.

**Catherine Phan** is currently a student at the W. P. Carey School of Business at Arizona State University in Tempe, Arizona, and will be graduating in December 2015 with a bachelor of Science degree in Computer Information Systems with a certificate in International Business Studies, along with a Bachelor of Arts degree in French. During the Summer of 2015, she interned as a .NET Developer at PetSmart Inc. in Phoenix, Arizona, where she worked as a member of the Application Technology and Development team and assisted in developing and deploying iOS applications.

**Don Reese** is an experienced IT professional with over 25 years in the Information Technology industry, and has provided technology solutions to companies of every size from mom-and-pop shops to multinational Fortune 100 enterprises. He has been interviewed for articles in numerous publications such as InformationWeek and Small Business Computing Magazine as a subject matter expert in enterprise networking and security, and conducted product demos at industry trade shows such as Comdex and CeBIT. He currently works for a global IT services cloud provider as a virtualized infrastructure engineer specializing in Microsoft Windows Server and Active Directory solutions, and regularly attends local and

regional industry events such as VMUG (VMware User Group), PASS (Professional Association for SQL Server) and SCALE (Southern California Linux Expo). Don is completing his Bachelor of Science degree in Computer Information Systems, with a Certificate in Business Data Analytics and will graduate from the W. P. Carey School of Business at Arizona State University in December 2015.

**Michael Spitzkoff** has an extensive background in a variety of different industries. Seeing both sides of the healthcare industry, Michael has worked on the administration side and the preventive-treatment side. On the administration side he has five years of experience working in adjustments of insurance medical claims. For the preventive-treatment side, he worked in Hospital Central Service and Respiratory Technology. As a United States Army Veteran, Michael worked in logistics both oversees and stateside. While stationed in Fort Knox Kentucky he managed the supply chain of three regimental sized units. He has experience in retail by managing day-to-day operations in a store-front and an e-commerce website. Michael previously earned his Bachelor of Science degree in Business Administration from Arizona State University. He will be graduating with an additional Bachelor of Science degree in Computer Information Systems in December 2015 from the W. P. Carey School of Business at Arizona State University. Along with being happily married for over three years, Michael's true passion is creative writing but has many other hobbies such as sports and film.

**Client Introduction**

Arizona State University's Department of Information Systems Club (DISC) is a college career-oriented networking club that is comprised of students who are deemed to be professionals-in-training. DISC was founded in 1999 and has grown into an internationally-recognized, dynamic medium for career development and recruiting efforts. The club is currently headed by President Aaron Ortega, Vice President of IT Cristian Curiel, and Vice President of Finance Jeremy Knorr along with five additional board members. Most DISC members are students that are pursuing their Computer Information Systems degree. The DISC club acts as an extension to what members learn in the classroom environment. The CIS program does an excellent job familiarizing students with disciplines in information technology and business concepts, and the role of DISC is to put them into action with real world applications. The club focuses on career development, leadership, team collaboration, and community involvement. The most advantageous aspect of being a DISC member is the club networks with leading firms and professionals from a wide range of industries. Not only can a student gain valuable insights and rub shoulders with professionals in the technology field, DISC members can also make valuable contacts which may lead to future employment.

**The Problem**

Several semesters ago, the student member who originally created the DISC website graduated and went on to pursue their career, they were unable to keep up with website maintenance or respond to feature requests. The website was originally created using the Ruby on Rails framework, and none of the current members were proficient with that skillset. Ruby on Rails generally is not a language that is considered to be easily maintainable, accessible, nor extensible. Aside from the programming language issues, the website had not been updated for an extensive period of time and needed a new touch. The home page and the color palette needed to be updated, and some redundancy needed to be removed. Some functionality, such as the 'Post a Job' page, needed to be removed since it was not being used at all by the members. The blog page was not up to par with current day social media and needed an overhaul. The calendar page did not resemble a typical calendar page with the format that the creator originally implemented. The DISC board wanted some additional features added to the registration page and to be able to create an online shopping cart. The DISC organization also had limited access to be able to edit and update the site.

**Proposed Solution**

The simplest solution for the DISC website would be to re-create a site that is accessible, extensible, and easily maintainable. WordPress, which is a CMS or content management system that is free and open-source, would fit the three characteristics listed above. On WordPress, a user can utilize features such as plugin architecture and template-based web building systems. The standard coding languages used with WordPress include the industry standard HTML, CSS, PHP and MySQL.

To implement the basic WordPress development system, our team utilized an existing hosting account at 1and1.com and installed WordPress as a hosted app. From there, we installed the necessary plugins specific to the DISC wish list and to mimic existing functionality. The plugins we used pertained to the registration, login, event calendar, and blog pages. As on the original DISC site, there will be a standard horizontal text menu used for the navigation on the new website. A customizable plugin for the registration and login pages would be used to enable database extensions to allow for capturing expected graduation, shirt size, and gender fields that are not normally part of the basic WordPress login function. Social Media connectivity was another request linking the DISC site with social media sites like Facebook and Twitter. This would be accomplished through a plugin installed through the blog roll page.

The normal account registration of a user only captures a few data points such as first and last name, username, and password, although custom fields can be created by installing a WordPress plugin. Database testing was performed by utilizing another WordPress plugin that allowed access to the raw database structure that is normally hidden from users.

For the calendar page, a customized plugin was installed to enable the user to click on a dates' given event and view all the details of that event. After the user reviews the details of the

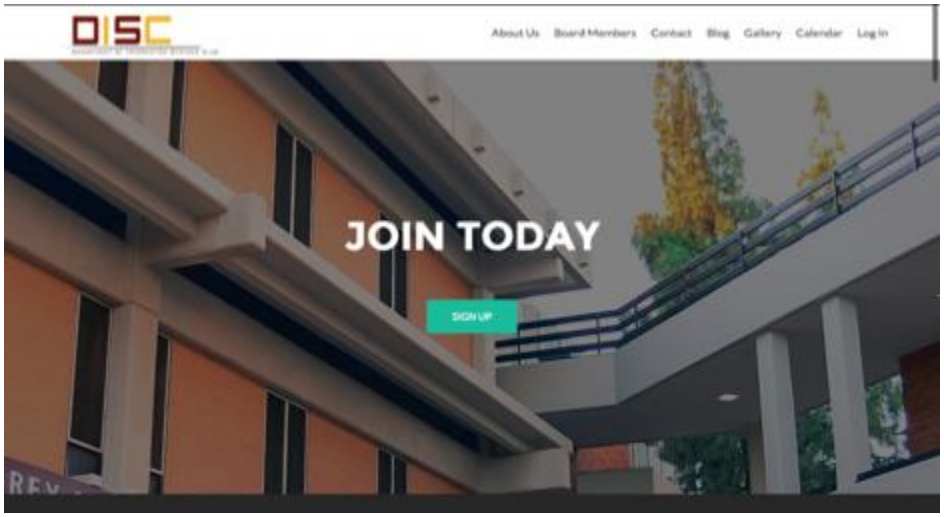
event, they can expedite the process and RSVP on the spot. The original DISC site also featured a calendar page but it was often times seen as unclear where the user had to click to see the actual calendar. The calendar plugin installed would help rectify the previous confusion the old website might have caused.

Lastly, the Post a Job Board page from the original website was taken out due to inactivity, but is slated as a future feature enhancement.

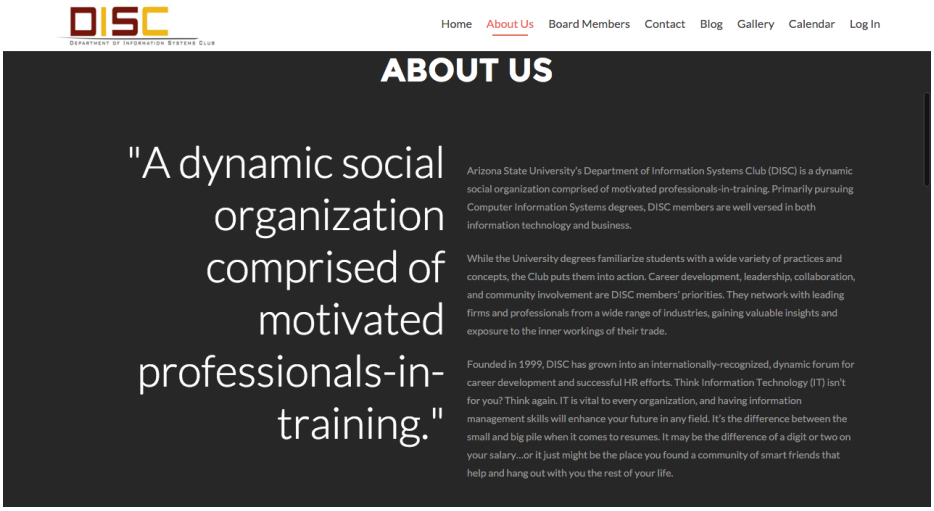
**Overview of Functionality**

The DISC web application allows its users to access a registration page, a member database, a calendar of events, an e-mail contact form, a news or blog tab, and a photo gallery. The specific pages are as follows:

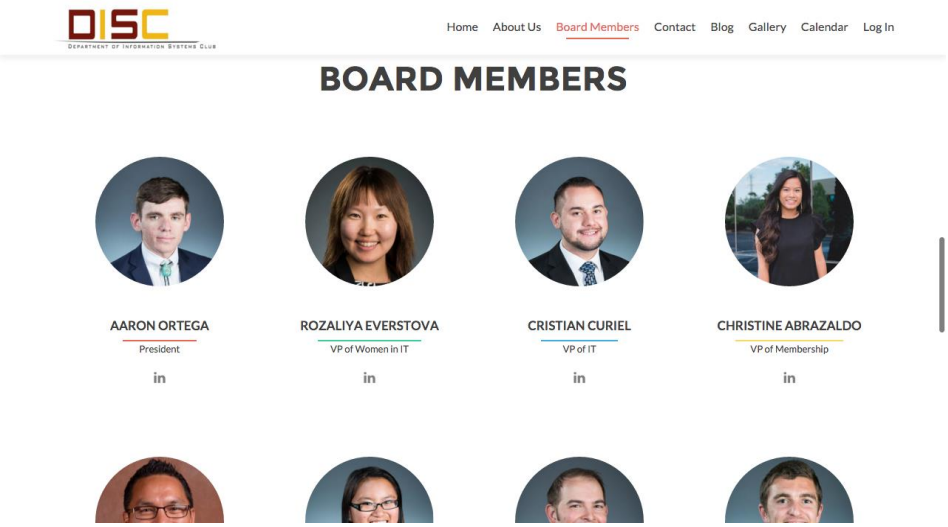
- Home page
    - Directs to the main DISC home page with its focus on a Sign Up link



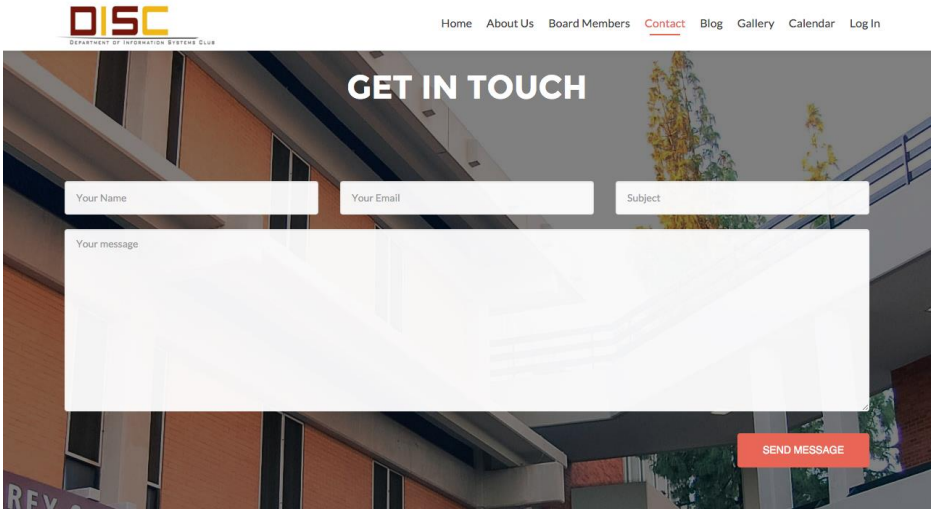

- About Us
    - Provides an overview of the Department of Information Systems Club



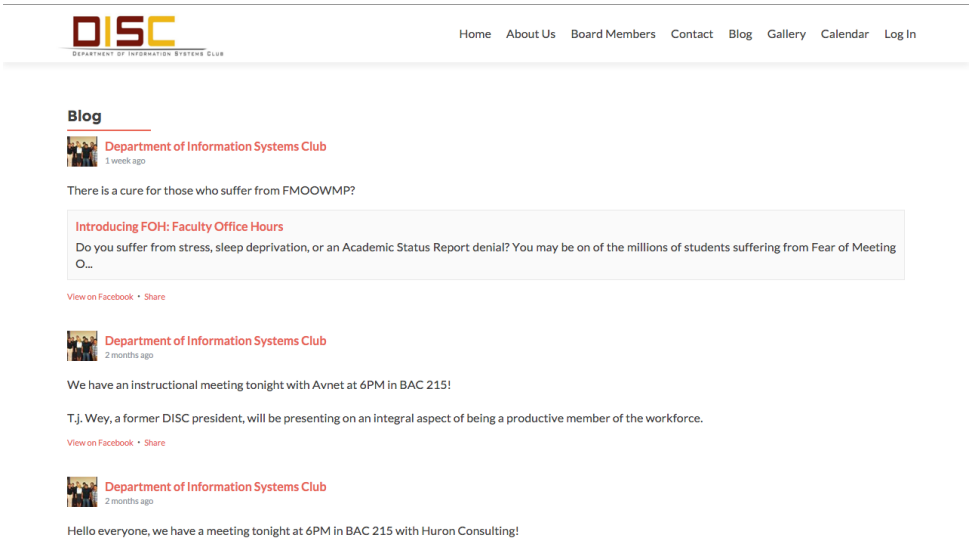
- Board Members
    - Includes names, photos, position, and access to their LinkedIn profile



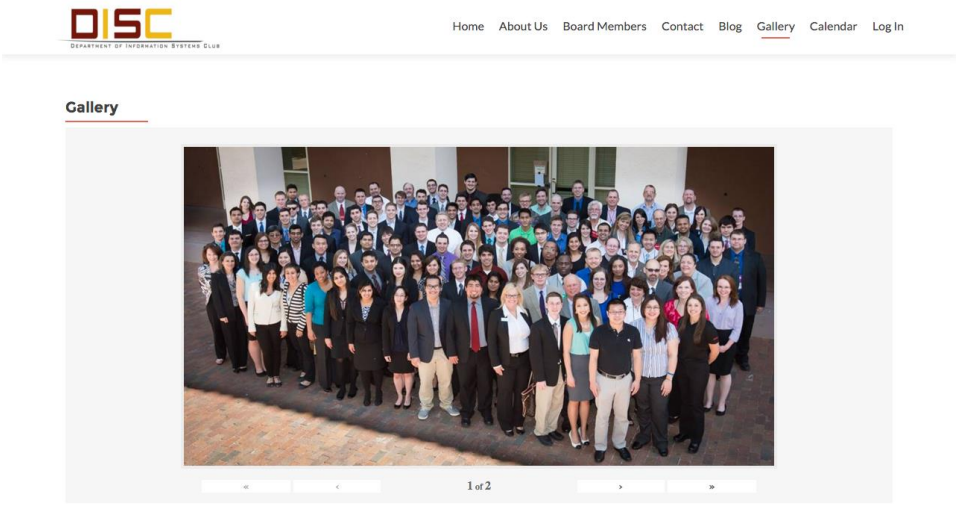

- Contact
    - Allows users to directly email the club at asudisc@gmail.com using a simple form



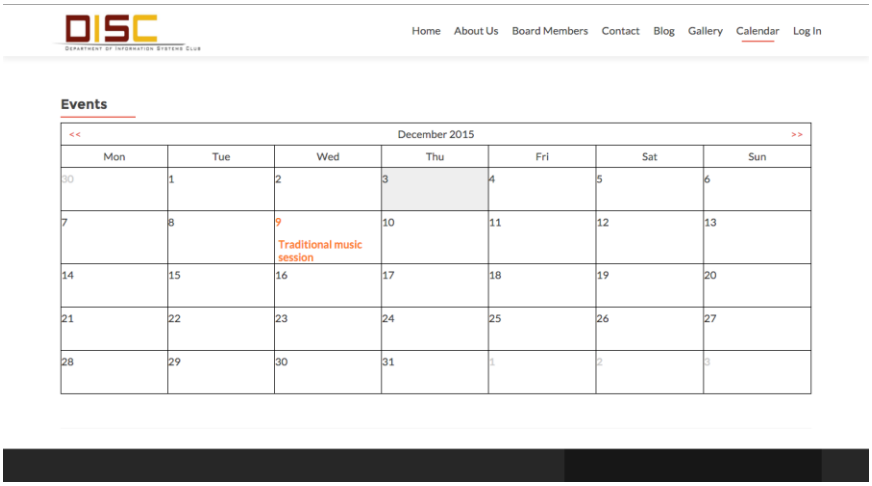
- Blog
    - Pulls the latest posts from the DISC Facebook page. Users can choose to view the post directly on Facebook as well as share the posts via Facebook, Twitter, Google+, LinkedIn, and email.



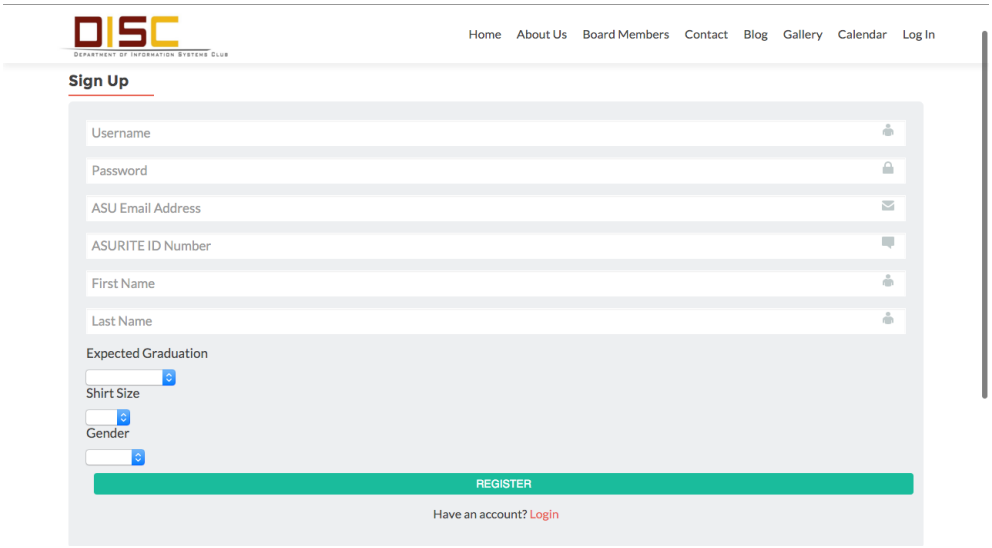

- Gallery
    - Displays photos from past DISC events in a slideshow format



- Calendar
    - Shows upcoming and previous DISC events on a traditional calendar setting. Users are able to click on these events for more detail and to RSVP




- Registration
    - Users can sign up to become a member of DISC. The form consists of ASU ID number, Expected Graduation, and Shirt Size in addition to standard fields. Upon registration, members will be able to login, logout, and reset their passwords.



**Technical/Business Challenges and Solutions**

In the beginning, one of the biggest challenges of our project was that we were not able to get a clear understanding of the needs of our client. The president of DISC was occupied at the beginning of the semester and was not able to give us a clear "need-to-have" and "like-to-have," so that we have a clear priorities list of what we need to do. We approached this with basic intuition. The objective was to redesign their organization's website, so we took the project step by step, deciding which platform we were going to build it on by selecting the one that would be the easiest to manage since the previous website was unmanageable due to the departure of the original creator of the website.

The second challenge was getting ourselves used to WordPress, which was the platform we had chosen. Only one of our group members was an expert on WordPress and the rest of us had to go online to help forums and look up how to do certain changes or add certain features. This slowed our progress down immensely compared to how long the project would have taken if we were at least somewhat familiar with the features of the platform. We approached this by just seeking instructions from various sources on how to accomplish the tasks assigned to us, or by asking each other how to do certain things which slowly but surely improved our progress on completing the major parts of the project.

The third challenge was to get a separate database to manage our member data, which took us the longest to accomplish. Originally, our website was not a standalone site and that limited our capabilities of adding our own database. Because some of the team was less familiar with the more technical side of WordPress, some features were tackled by our more experienced members. The length of completion for this task was long as well because we had to move the entire site to make it a standalone website.

Lastly, the challenge that hindered us through the entire semester was our schedules, including that of our client's, which did not allow for many opportunities where all team members could make it to a DISC meeting to communicate with our client and have a chance to present our project to the members of DISC. Through the grind of the semester, we were not able to adjust our schedules to make this happen. What made it worse was the fact that communication between our group and DISC was difficult, as we were not able to get feedback as quickly, or often, as we had hoped, and the feedback received was rather vague and not well-detailed.

**Technology Stack**

Because our project was built through a web development platform, there was a limited variety in our technology stack. The website was built on WordPress which works as a user-friendly GUI that does most of the hardcoding for us, and we added different WordPress plugins to add different functionality. The website is hosted on one of our member's hosting accounts. To add the login/logout functionality, we used a plugin called Profile Press, which is a WordPress plugin that creates and allows us to customize the look and feel of the registration page, login page, logout page and the redirection of the pages. With almost no code we were able to create the look of the functionality, but unfortunately we were not able to successfully complete this functionality due to some issues we ran into for this plugin. For the events function of our website which allows users to rsvp into events for the website, we used a plugin called Events made Easy. This plugin not only gave us the rsvp functionality but also ICAL and RSS Feed capability. For our Facebook feed we used a plugin which connected our website to the DISC Facebook page, which allowed new posts to the Facebook page to appear on our website, so that users can go to the website and see the Facebook posts without having to actually go on Facebook. For the Photo Gallery, a simple plugin and some minor configuration created the gallery on our website without the need for us to code. Our technology stack did not consist of a lot of different programs, languages or technology but the one platform we had, consisted of numerous different plugins all developed differently and our challenge was to choose which ones to use and which combination would create for us the website we needed.

**Testing Activities and Feedback**

Front-end usability testing was performed on the DISC website to ensure optimal performance and functionality. The tests, which included hallway testing, paper-prototype testing, questionnaires, and cognitive walkthroughs, were completed using participants which include members of the Department of Information Systems Club as well as students and faculty of Arizona State University, both of which are the real users of the website.

Using the hallway testing method, participants were selected at random in high-traffic areas to test the usability and functionality of the website for various function tasks. Evaluation guidelines included items such as visual appeal, page organization and formatting, content and terminology, and ease of use.

With paper-prototype testing, various screens of the website were sketched and use cases were created following evaluation guidelines. Participants were requested to carry out various tasks with the paper prototypes. Based on how they interact with the prototypes, the screens were changed depending on how the application is supposed to react.

Post-study usability questionnaires were also used to measure users' perceived overall satisfaction after completing tasks, as well as website usefulness, information quality, and interface quality. The questionnaires asked participants to rate statements such as "It was easy to find the information I needed" and "The information was effective in helping me complete the tasks and scenarios" on a scale from 1 to 7 where a lower number indicates disagreement and a higher number indicates agreement.

Lastly, cognitive (or do-it-yourself) walkthroughs were done by one of our own team members. To determine the usability of the website, the team member walked through a set of typical user tasks, or sequence of steps required by a user to accomplish a certain task or multiple

tasks. At each step in the procedure, they propose questions about their expectations of the users' behaviors, such as "Will the user try to achieve the effect that the subtask has?" and "Will the user notice that the correct action is available?" Any usability problems became apparent after walking through each task as a user.

Overall, the four usability tests that were performed provided both negative and positive feedback with regards to the website. The most notable issue was that the main login link did not automatically change to logout upon user sign in. Clicking on the login link will still present the same page, allowing the user to override the current login with the same account or another account. The logout link was only available via the native WordPress member tab on the right hand corner of the page, which is not immediately noticeable to the user. Furthermore, logging out returned the user erroneously to the blog page instead of returning to the home page and confirming that the user has successfully signed out. Another problem was that logging in with a non-administrative member account immediately lead to the dashboard page, rather than the homepage, where they were presented with error messages stating that they did not have the right authentication to access various plugins for the website. There were also some suggestions made from users in terms of page formatting, such as the noticeability of the confirmation and error messages in terms of color and font size. With the reception of negative feedback, the website was changed in order to remedy each of these issues as best as possible. It is important to note that there was also a great amount of positive feedback from users, with many commenting that the website was very easy to navigate and understand, well-planned in terms of overall functionality, and highly visually appealing.

**Future Extensions**

Since the Post a Job Board page was taken off the website, Aaron and our group decided there should be a feature that still enables students to make potential employment connections. What we decided on is to eventually create some kind of a place on the website where a student can market themselves or possibly gain the interest of recruiters. Implementing this extension would involve expanding our registration page to where a student can upload their résumé onto the DISC site while signing up to become a DISC member. To coincide with résumé posting capabilities on to the DISC site, there were a few other features discussed as possibilities for students to increase their chances to market themselves for respective employers. These additional features would include fields stating the status and skills of a student to complement their résumé. The fields would specify when the student graduates, current job status, student GPA, technical skills, and jobs of interest in the technology field of course. Even though a résumé could have many if not all the caveats listed above, it would not be detrimental to reinforce a student's assets while marketing them for future employment. Naturally, the added features would have to be implemented into the registration section of the database.

Another feature that may be added to the DISC site is creating some kind of pop-up mechanism for the registration and login page. When a user looks to register and clicks on the signup button instead of being routed to another page, a registration pop-up can be displayed over the current page. Once the user signs up, the registration display goes away and the user is automatically re-routed back to the previous page they were on. Since we were not able to finish adding the PayPal feature where the members can pay their dues with PayPal through the website and fully integrating a database to the website, where user data/registration can be saved and pulled, any possible future extensions will include finishing the database integration to

complete a fully working DISC website. Other possible extensions include giving members the function of adding their résumés to their accounts for possible employers to view and a mini profile for the same purpose as well. Sphere as a team will probably not develop the website any further as it is unsure if DISC will continue on in the same direction. The scope of what we could add in the future is wide and there are several things that we were not able to finish. However, we have created a functional website, and although we have not worked out all the kinks, or taken the site into production, we take this experience beyond this class towards our future endeavors.