



P3 Report

System Prototyping and Evaluation Plan

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Engage

- Help stay-at-home dads go back to professional industry
- Combination of physical and digital design
- Test video

Tip clip: <https://www.youtube.com/watch?v=C1k5Ve0dPx E>

Website: <https://www.youtube.com/watch?v=0LJ37wpN8w8&feature=youtu.be>

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1 INTRODUCTION

After the completion of P2, we received feedback on our three design ideas: an NFC-enabled wearable and associated website, Getting Current Application, and Goal Tracking Application. The first idea was most highly rated for its innovativeness, and people generally . However, there are still some highlights in the other two designs. It is suggested that we develop the first idea while implementing some highlighted functions of the other two into it.

The first thing we considered was the physical device. we should think of a suitable device to realize NFC function. The original idea of using a bracelet was not good enough as it was too noticeable that may add to stigma surrounding stay-at-home dads. What is more, the bracelet is not formal enough for career meeting. Another reason for not sticking to original idea is that bracelet is not convenient to carrying. We want to use a easy-to-carry device that can be used in different situations including formal conference as well as casual meeting. According to the considerations above, we developed the idea using tie clip instead. It can be both used in formal situation when clipping to a tie and in any casual situation when just clipping to clothes or pants. And it is easy to carry. Furthermore, considering the behavior to tap the mobile phone, tie clip would be much more natural than bracelet. So we decided to use tie clip containing a NFC chip to realize the physical connection.

As to online part, we finally decided to make a website instead of mobile application due to the large amount of information we are going to offer through digital way. Website can contain more information and easier for searching. Another reason is that according to our previous research, stay-at-home dads spent a lot of time in front of computer so that they have easy access to website. However, we still need to consider the situation that they may use mobile for our web like in a conference or just came across a person from industry. In this case, we just made the web responsive to mobile devices.

We were suggested by feedbacks that the web should not be exclusive, instead, it would be more informative to include people from industry besides stay-at-home dads, so our website includes two groups of people: stay-at-home dads and people from industry. But we need to make a balance in exclusivity as too much would ruin the reliability of the whole system. So we still kept

some restrictions, for example, only people who purchased the tie clip can provide feedbacks of tips. And everybody is required to provide their LinkedIn address so that his/her professional profile can be seen by others in this community. In addition, the fact that the physical device providing face-to-face communication also increases the reliability of our system. As to the function of this system, instead of the pure function of submitting and viewing tips, we added some other functions which were original from the other two ideas. In the end, the whole functions of our online systems were divided into three parts: submitting or viewing tips, submitting or viewing jobs, and searching for people. Also, people can purchase tie clips through our website.

So the whole system would be divided into two parts: online website and offline tie clip. Online web is used for different career-related information sharing as well as a platform for virtual community, and tie clip strengthen the connection in physical way among stay-at-home dads and industry professionals.

2 DESCRIPTION OF THE PROTOTYPE

2.1 Digital prototype-Website

2.1.1 Front-end design and philosophy

2.1.1.1 Brief description

Our website provides interaction for both Stay-at-home fathers and industry professionals looking to hire Stay-at-home fathers. One thing that we noticed when doing our initial research is that there weren't many websites that provided a central location for all tips related to helping stay-at-home fathers return to work, so that is the core functionality of our website. Even if you aren't a stay-at-home father or an industry professional, you can view the tips that have been submitted. Only stay-at-home fathers and industry professionals can create accounts on our website and submit tips to help stay-at-home fathers return to work. In addition, if you are a stay-at-home father, you can provide feedback on tips that have been submitted, provided you have purchased a tie clip (explained in section 2.2). Since only stay-at-home fathers will be able to purchase the tie clip (ensured through back-end database checks), this provides all stay-at-

home fathers extra assurance that the tip ratings are accurate for the demographic, since only stay-at-home dads can purchase tie clips.

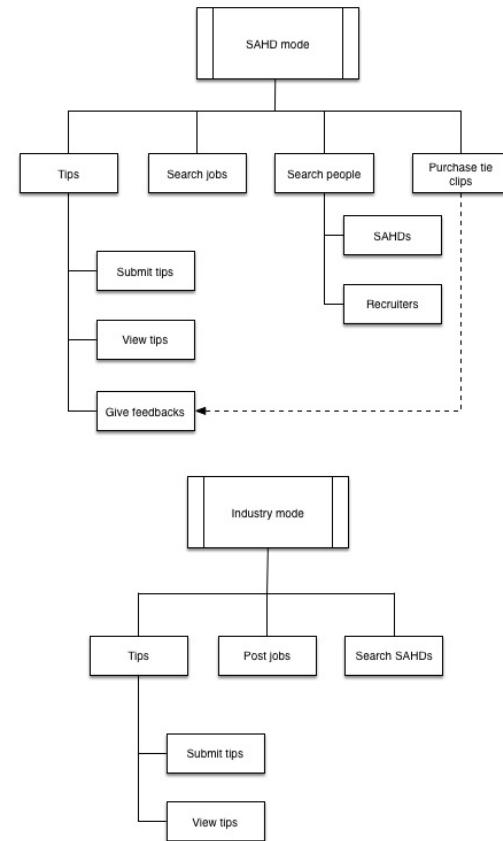
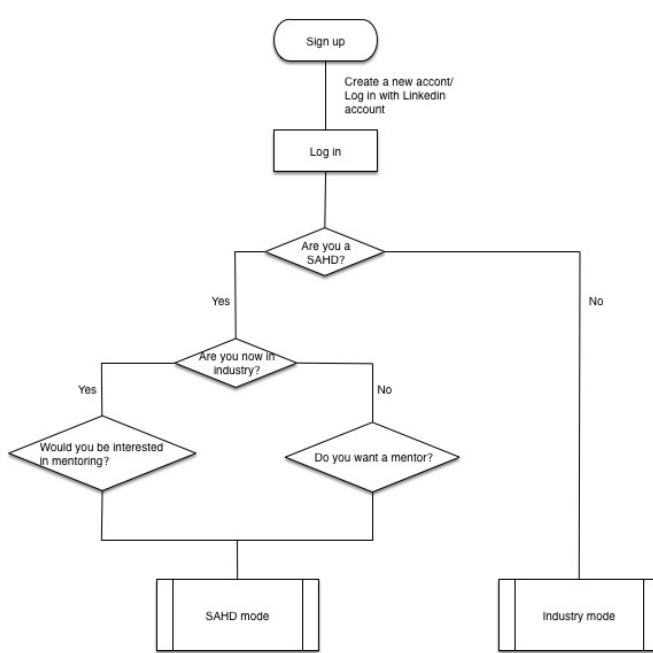
2.1.1.2 Interface design

There are two versions of interfaces.

1. First version

The first version was done before realizing any functions. It was aimed to clarify the function and display whole outline of the web to make everyone in the team in the same page. And also to provide an overview of the whole system so as to visualize our ideas, in which case helped the whole team realize how our system would work like and modify the system for a better functionality.

- This version of interface were majorly down in designer's view without considering much of the combination of front-end and back-end language.
- This version of interface was a low-fidelity prototype with frameworks as the purpose is to structure the whole function. However, the basic outlook can be seen as main color and several pictures has been added.
- This version was developed by the original flowcharts shown below.



The first version of interfaces is as followed:

- Home page

Who we are

Develop a message center that a busy family could use to communicate, perhaps across time and perhaps across space. Think about where in the house they might access it. Access from elsewhere? A physical device or/and a virtual space? What kind of messaging does it need to support? What modalities and interactions does it need to support? What other information and services would be integrated into it.

How we work

Develop a message center that a busy family could use to communicate, perhaps across time and perhaps across space. Think about where in the house they might access it. Access from elsewhere? A physical device or/and a virtual space? What kind of messaging does it need to support? What modalities and interactions does it need to support? What other information and services would be integrated into it.

Contact us

Develop a message center that a busy family could use to communicate, perhaps across time and perhaps across space. Think about where in the house they might access it. Access from elsewhere? A physical device or/and a virtual space? What kind of messaging does it need to support? What modalities and interactions does it need to support? What other information and services would be integrated into it.

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The function of Home page is to show the overview of our website: what is the web and how it works. The main menu bar shows the main sections of the web-tips, jobs, people and tie clip. ‘Sign up’ and ‘Log in’ button are placed at the right top. The whole bar menu as well as ‘Sign up’ and ‘Log in’ buttons will stay in all the pages for navigation. The image below the bar menu provides a visual information about the goal of our website-engaging stay-at-home dads to the working industry. The logo at the left top plays the same role. Texting under the image clearly tells ‘Who we are’ ‘How we work’ and ‘Contact information’.

- Sign up & Log in interface

Both of them were using pop-up style so that they can be shown anytime without changing pages. For register, several information would be collected including basic personal information and whether they are stay-at-home dads for industry professional, as well as their willingness for mentor-mentee system. For log in, only email address and password are needed. Some functions in the system can only be used after logging in to guarantee the reliability of our system.

- Tips

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This page is for viewing all tips. Categories are on the left and the related tips are listed on the right. We can view the brief description of the tips and the rating of it (which is calculated by all the given feedbacks). And there is ‘Add my tips’ at the bottom.

Copyright @ 2014

This page is for viewing a specific tip. It shows in pop-up style and users can view the whole tip as well as all the feedbacks. They can also submit their own feedback if they are stay-at-home dads who have purchased tie clips.

The screenshot shows a 'My Tip' page with a header 'Engage' and a navigation bar with tabs: Home, Tips (selected), Jobs, People, Tie clip, and a search bar. The main content area has sections for Category ('Back to work'), Topic ('How to balance my family and work'), and Contents. The contents area contains a placeholder text: 'Hello %USER_FULL_NAME%. At vero eos et accusamus et iusto odio dignissimos ducimus qui blanditiis praesentium voluptatum deleniti atque corrupti; quos dolores et quas molestias excepturi sint occaecati cupiditate non provident, similique sunt in culpa qui officia deserunt mollitia animi, id est laborum et dolorum fuga. Et harum quidem rerum facilis est et expedita distinctio. Nam libero tempore, cum soluta nobis est eligendi optio cumque nihil impedit quo minus id quod maxime placeat facere possimus, omnis voluptas assumenda est, omnis dolor repellendus.' Below the content are 'Submit' and 'Cancel' buttons. A dark blue footer bar at the bottom left contains the text 'Copyright @ 2014'.

This page is for submitting tips. It comes after clicking 'Add my tips'.

- Jobs

The screenshot shows a 'Jobs' page with a header 'Engage' and a navigation bar with tabs: Home, Tips, Jobs (selected), People, Tie clip, and a search bar. The main content area displays a table of job listings. The columns are 'Art', 'Job Title', and 'Job Description'. The 'Art' column lists categories: Engineering, Science, Business, and Others. The 'Job Title' column lists specific roles: Web design SMART ART (for Tom and Greek), and Web design SMART ART (for Kim). The 'Job Description' column contains placeholder text for each role. Each job entry includes a 'Read more' button. A dark blue footer bar at the bottom left contains the text 'Copyright @ 2014'.

This page is for viewing all jobs provided by people from industry. They are allowed to post jobs on it. The jobs are divided into different categories, which is similar to Tips.

- People

The screenshot shows the 'People' section of the Engage platform. At the top, there's a navigation bar with links for Home, Tips, Jobs, People (which is highlighted in blue), and Tie clip. There's also a search bar and a 'Sign up | Log in' button. On the left, there's a sidebar with three categories: Stay-at-home dads, People from industry (which is selected and highlighted in blue), and Available mentors. The main content area displays three job posts by a user named 'Dean'. Each post has a placeholder profile picture, the name 'Dean', a short description of the job (Hello! Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas...), and a 'LinkedIn URL' link.

This page is for viewing and searching people in this system to establish a virtual community for better communication. And the tie clip will strengthen the connection by physical communication. The user can search all people both belonging to stay-at-home dads and industry professionals.

It is a personal profile which provides all basic information of the specific user. Their linkedin URL, their tips and feedbacks as well as their connections can be shown in this page so that people can get a better understanding of the certain user.

2. Second version

All the interfaces above are what has been achieved in the first version. However, some of the stylings takes too much time to realize so they have been changed in the second version. The second version was done cooperated with developing. As the web should be connected with back-end programming, negotiation should be made due to the limited developing time. We were agreed that functionality would be more important than styling as our system is function-based and the evaluation will majorly test the function of our system to check whether it works for our targeted users. So the second version of interfaces followed more on the function the system was supposed to achieve.

- This version of interfaces was majorly done according to the function the system should achieve, instead of focusing on stylings.

- This version of interfaces were not in high-fidelity. We made it as simple as possible, eliminating or the other styling to let users for evaluation focus more on our functions rather than distracted by graphics, etc.

The interfaces are as followed:

- Home page

It is the same as the first version, so it is not shown here.

- Tips

In order to make the two functions of Tips more clear, we put ‘Submit Tips’ and ‘View Tips’ at the top. For submitting tips, categories should be chosen. For viewing tips, there are several filters that can help the searching process. And When clicking ‘view tips’ button, all tips meeting the requirements of filers will be shown. Feedbacks for tips can be seen or submitted by clicking ‘Feedback’ button at the right part of the tip. Feedbacks include rating for the tip as well as the text.

The screenshot shows a web-based application interface. At the top, there's a navigation bar with links for Home, Tips, Jobs, People, Tip clip, Sign up / Log in, and a search bar. Below the navigation, there are two main sections: 'Submit Tips' on the left and 'View Tips' on the right. The 'Submit Tips' section contains fields for Category, Description, and User name, with a 'Submit' button. The 'View Tips' section contains fields for Category, Keywords, and User name, with a 'View' button.

ID	Category	Description	Author	Rating	
1	xxx	xxx	xxx	xxx	<button>Feedback</button>
2	xxx	xxx	xx	xxx	<button>Feedback</button>
3	xxx	xxx	xxx	xxx	<button>Feedback</button>

This screenshot shows a simplified view of the tip submission and viewing process. It features a large input field for 'Tip ID', a dropdown menu for 'Category', and two buttons at the bottom: 'Submit' and 'View'.

Feedback for Tip 5

	Rating	
Hello! Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas.		
	Rating	
Hello! Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas.		
	Rating	
Hello! Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas.		

- People

The order of Jobs and People on the bar menu was changed due to the goal for better connection so we thought the function of searching for people might be more important than jobs. As people in this virtual community are divided into two groups: stay-at-home dads and industry professional, we made two search buttons as two categories for searching. Some filters will be shown after clicking the buttons.

It is for searching for stay-at-home dads.



The screenshot shows the Engage platform's navigation bar with the "People" tab highlighted in blue. The other tabs are "Home", "Tips", "Jobs", and "Tie Clip". A search bar is located at the top right. The user is logged in as "jhinkel3".

To search for stay-at-home fathers, click the left button. To search for industry professionals, click the right button.

Search for a Stay-at-Home Dad	Search for an Industry Professional
Interested in Being a Mentor? <input type="checkbox"/>	Currently in Industry? <input type="checkbox"/>
Want to connect with a Mentor? <input type="checkbox"/>	Username <input type="text"/>
<input type="button" value="Search"/>	

It is for searching for industry professionals.



The screenshot shows the Engage platform's navigation bar with the "People" tab highlighted in blue. The other tabs are "Home", "Tips", "Jobs", and "Tie Clip". A search bar is located at the top right. The user is logged in as "jhinkel3".

To search for stay-at-home fathers, click the left button. To search for industry professionals, click the right button.

Search for a Stay-at-Home Dad	Search for an Industry Professional	
Company <input type="text"/>	First Name <input type="text"/>	Last Name <input type="text"/>
Job Title <input type="text"/>	Positions Being Looked For <input type="text"/>	City <input type="text"/>
State <input type="text"/>	Username <input type="text"/>	Interested in Being a Mentor? <input type="checkbox"/>
Previous Stay-at-home father? <input type="checkbox"/>		
<input type="button" value="Search"/>		

The feedbacks can be shown after searching:

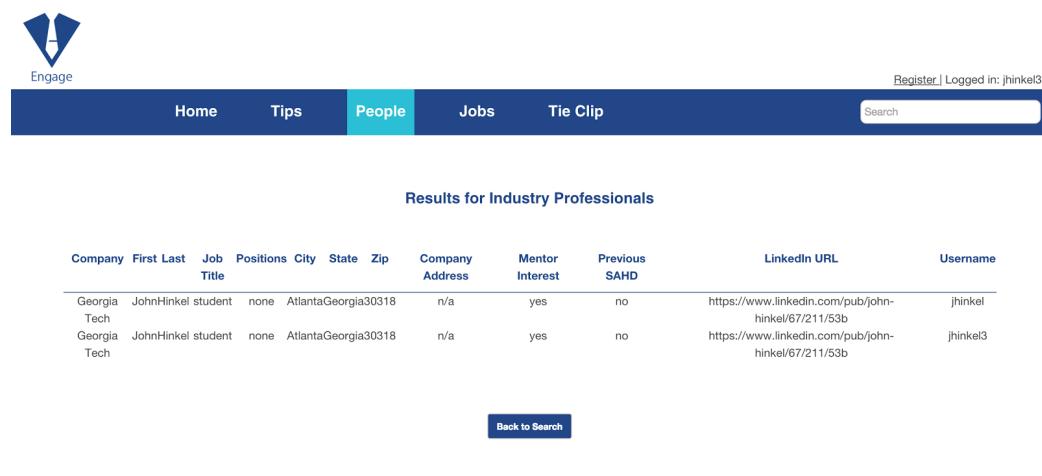


The screenshot shows the Engage platform's navigation bar with the "People" tab highlighted in blue. The other tabs are "Home", "Tips", "Jobs", and "Tie Clip". A search bar is located at the top right. The user is logged in as "jhinkel3".

Results for Stay-at-home Dads

Username	Interested in Being a Mentor?	Currently in Industry?	Want to connect with a Mentor?	LinkedIn URL
jhinkel	yes	no	no	https://www.linkedin.com/pub/john-hinkel/67/211/53b

[Back to Search](#)

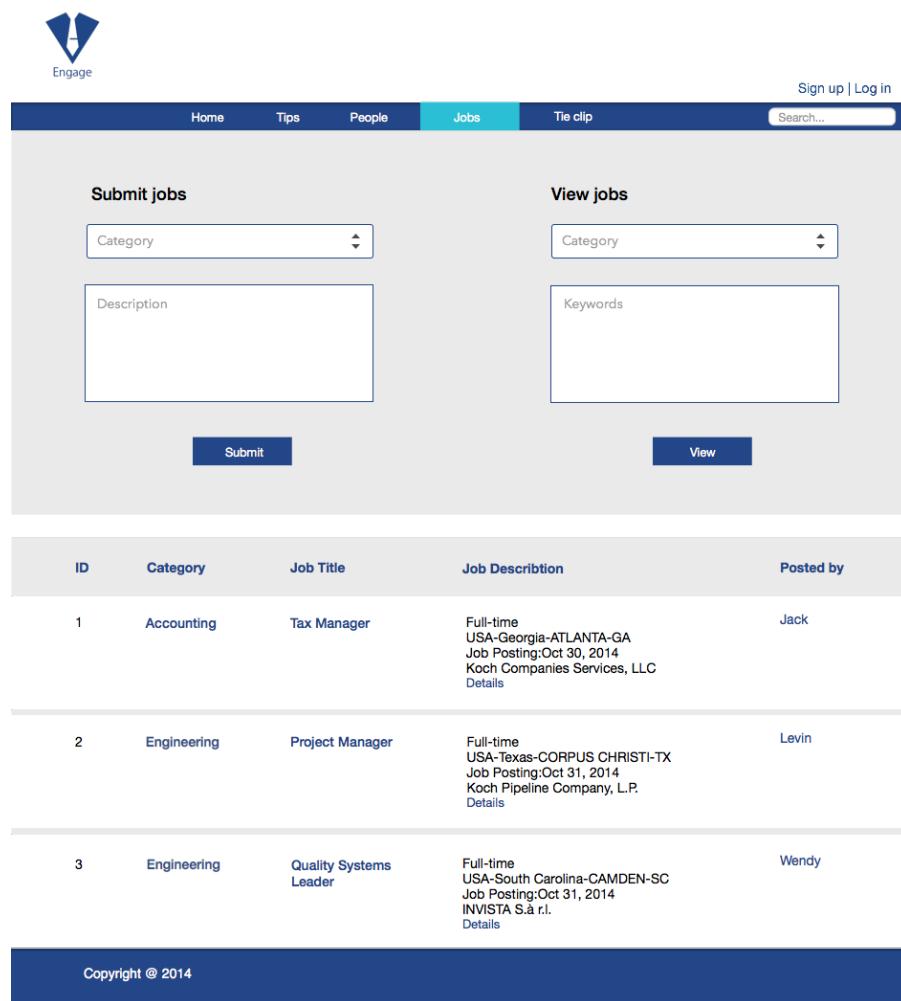


The screenshot shows a search results page titled "Results for Industry Professionals". The search bar at the top contains the query "Industry Professionals". Below the search bar is a table with columns: Company, First Last, Job Title, Positions, City, State, Zip, Company Address, Mentor Interest, Previous SAHD, LinkedIn URL, and Username. Two entries are listed:

Company	First Last	Job Title	Positions	City	State	Zip	Company Address	Mentor Interest	Previous SAHD	LinkedIn URL	Username
Georgia Tech	JohnHinkel student	none	Atlanta	Georgia	30318	n/a		yes	no	https://www.linkedin.com/pub/john-hinkel/67/211/53b	jhinkel
Georgia Tech	JohnHinkel student	none	Atlanta	Georgia	30318	n/a		yes	no	https://www.linkedin.com/pub/john-hinkel/67/211/53b	jhinkel3

A "Back to Search" button is located at the bottom of the results.

- Jobs



The screenshot shows two main sections: "Submit jobs" and "View jobs".

Submit jobs: Contains fields for "Category" (dropdown), "Description" (text area), and a "Submit" button.

View jobs: Contains fields for "Category" (dropdown) and "Keywords" (text area), with a "View" button.

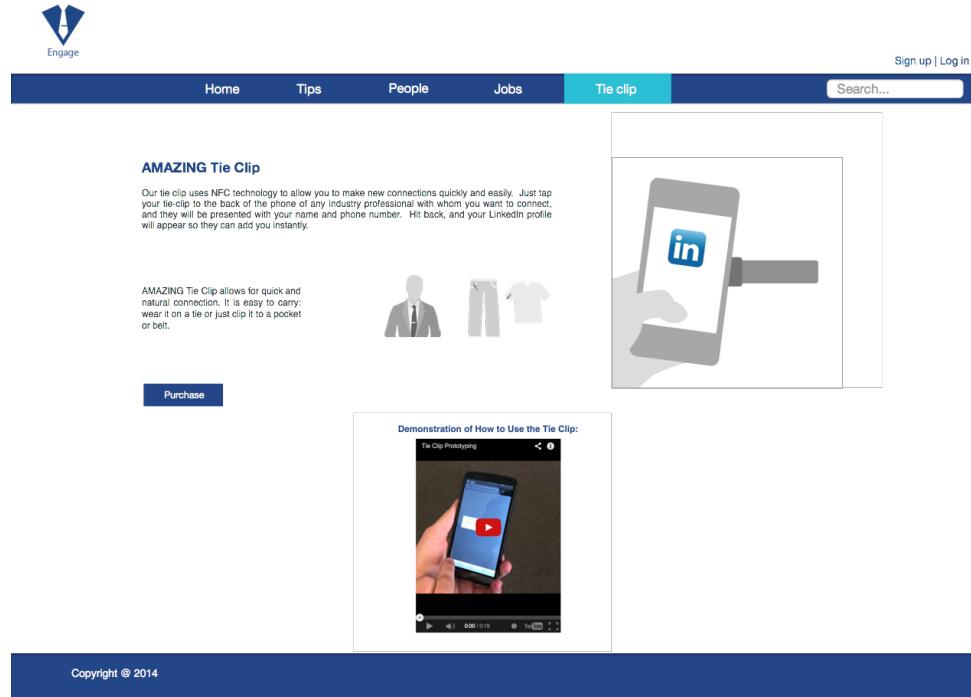
Job Listings: A table displays three job posts:

ID	Category	Job Title	Job Description	Posted by
1	Accounting	Tax Manager	Full-time USA-Georgia-ATLANTA-GA Job Posting:Oct 30, 2014 Koch Companies Services, LLC Details	Jack
2	Engineering	Project Manager	Full-time USA-Texas-CORPUS CHRISTI-TX Job Posting:Oct 31, 2014 Koch Pipeline Company, L.P. Details	Levin
3	Engineering	Quality Systems Leader	Full-time USA-South Carolina-CAMDEN-SC Job Posting:Oct 31, 2014 INVISTA S.à r.l. Details	Wendy

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This page is to search or post jobs. People from industry can post jobs and stay-at-home dads may majorly search jobs here. They are divided into different categories and filters are provided for specific searching.

- Tie clip



This page is to introduce the tie clip which is users use to connect with new professionals, who are then added to our database in the non prototype version. We explain the function of the tie clip and how it works on this page. Graphics and the video are included here for specific explanation. In addition, users can purchase tie clips here.

The modification of the website on mobile works nice. Here is some screenshots:

The screenshots show the Engage website on an iPhone screen at 2:00 AM, connected to AT&T 4G.

Home Screen:

- Header: AT&T 4G, 2:00 AM, johnhinkel.com, Register | Sign In.
- Logo: Engage (blue suit icon).
- Navigation: Home, Tips.
- Image: Two men in suits shaking hands.
- Section: Who we Are
- Description: Engage is a website built to help stay-at-home fathers easily return to the workforce. We aim to create a unique experience that allows easier communication between Stay-at-home fathers.
- Footer: Navigation icons (back, forward, search, etc.), AT&T 4G, 2:01 AM, johnhinkel.com.

Tips Screen:

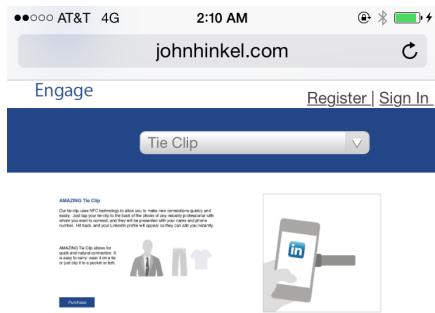
- Header: AT&T 4G, 2:00 AM, johnhinkel.com, Register | Sign In.
- Logo: Engage (blue suit icon).
- Section: Submit Tip
- Form fields: Tip Category, Description, Username: Author.
- Text: Log in to submit tips.
- Footer: Navigation icons (back, forward, search, etc.), AT&T 4G, 2:01 AM, johnhinkel.com.

Jobs Screen:

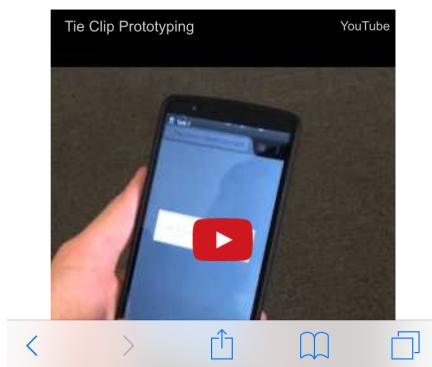
- Header: AT&T 4G, 2:01 AM, johnhinkel.com, Register | Sign In.
- Logo: Engage (blue suit icon).
- Section: People, Jobs
- Form fields: Submit jobs (Category, Description), View jobs (Category, Keyword).
- Table: Job listings

ID	Category	Job Title	Job Description	Posted by
1	Accounting	Tax Manager	Full-time Job Description: John Hinkel Job Posting On: 02/20/2014 Last Update: 02/20/2014	Jack
2	Engineering	Project Manager	Full-time Job Description: John Hinkel Job Posting On: 01/31/2014 Last Update: 01/31/2014	Lewis
3	Engineering	Quality Systems Leader	Full-time Job Description: John Hinkel Job Posting On: 01/31/2014 Last Update: 01/31/2014	Meredith

- Text: To search for stay-at-home fathers, click the left button. To search for industry professionals, click the right button.
- Footer: Navigation icons (back, forward, search, etc.), AT&T 4G, 2:01 AM, johnhinkel.com.



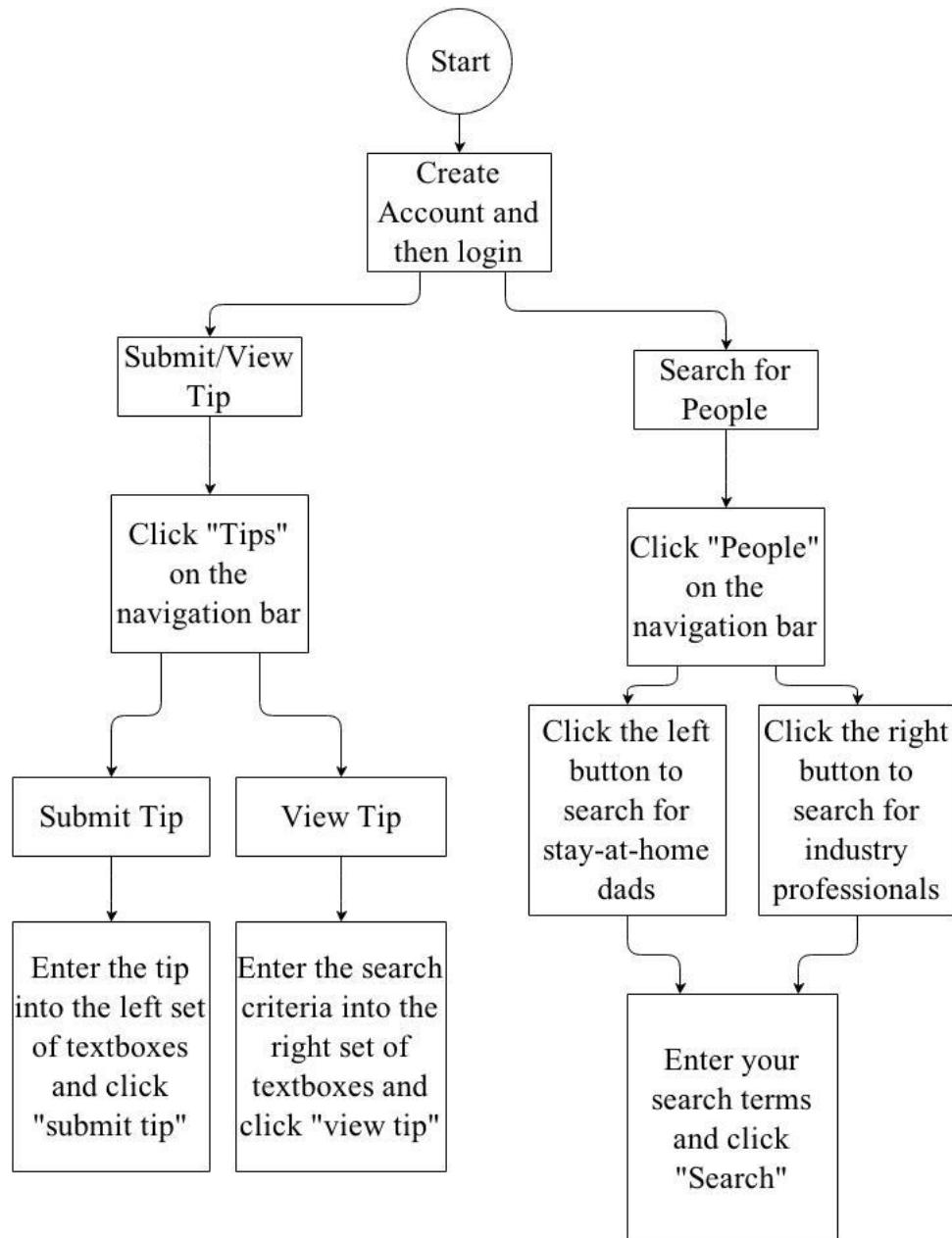
Demonstration of How to Use the Tie Clip:



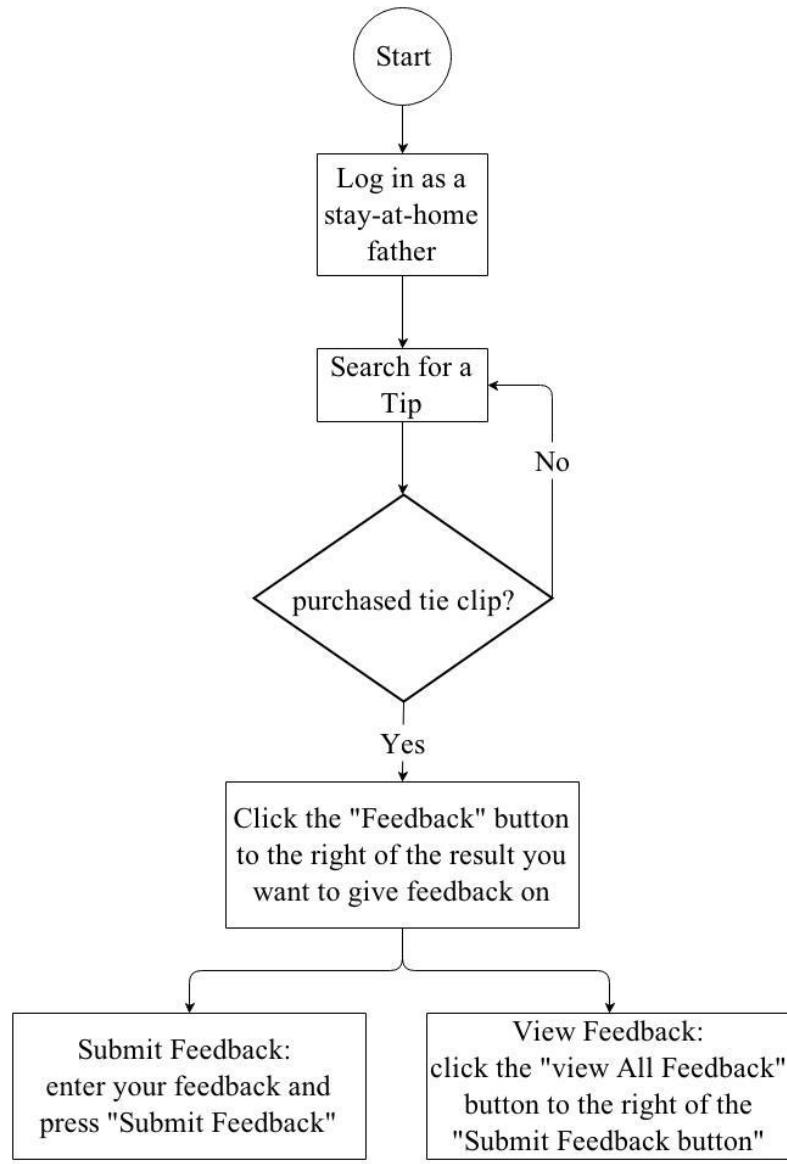
The link of our website: <http://johnhinkel.com/dads/>

2.1.2 walkthroughs of website functionality

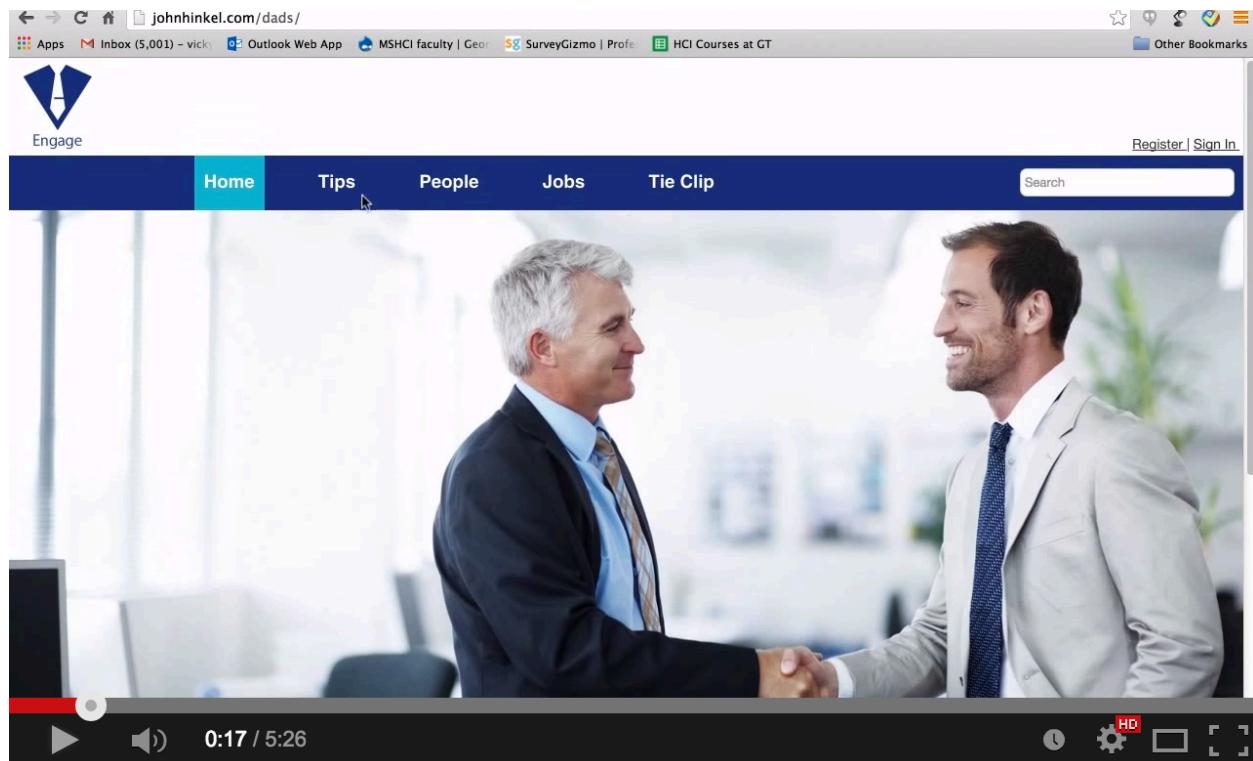
2.1.2.1 The flow of searching for people and submitting/viewing tips is represented using the following flowchart



2.1.2.2 The flow of submitting/viewing feedback is described in the following flowchart (note: only applies if you are logged in as a stay-at-home dad and have purchased the tie clip)



The test for the flow:



<https://www.youtube.com/watch?v=0LJ37wpN8w8&feature=youtu.be>

2.1.2.3 Back-end design

The back end uses a combination of php and MySQL to be able to store all the information you see displayed on the front-end. MySQL is a database engine that allows for advanced functionality such as an entire login/user management system. MySQL is also what provides the ability for users to submit tips. As soon as a user submits a tip, it is then stored to a database for later retrieval. All the search functionality (searching for tips/people based on certain filters) is accomplished by passing the search parameters the user enters to a database query. This query takes those parameters, accesses the database, and pulls back the relevant results. However, MySQL is just the engine that gives the database storage and definition. In order to actually access and search the data, you need to use php. Every “submit”, “search”, or “view” function seen on the webpage is driven by php. Basically, php acts as an intermediary between the front end and the MySQL database; it takes what the user enters on the front end and, through calling the appropriate functions and executing the appropriate database queries, pulls the correct data back from the database. Then, since php has the data, code is written that outputs that data in a tabular format for the user to see. php and mysql is also what allows for certain functions of the

site to be blocked for certain users (for example, Industry professionals cannot see the feedback options, but stay-at-home dads who have purchased the tie clip can). This is all done using cookies stored to indicate which user is signed in. by checking “remember me” on the login screen, users’ cookies will be stored for a longer time (i.e. you will remain logged in for a longer time if you check “remember me”). In addition, php easily allows for password encryption using strong cryptographic algorithms, so users who create accounts on our system are protected.

In addition to the use of MySQL and php, our website uses a special responsive design framework called skeleton.css, which allows our website to be accurately designed for smartphones as well as for desktop/laptop computing environments.

2.2 Physical prototype-Tie clip

2.2.1 Brief description

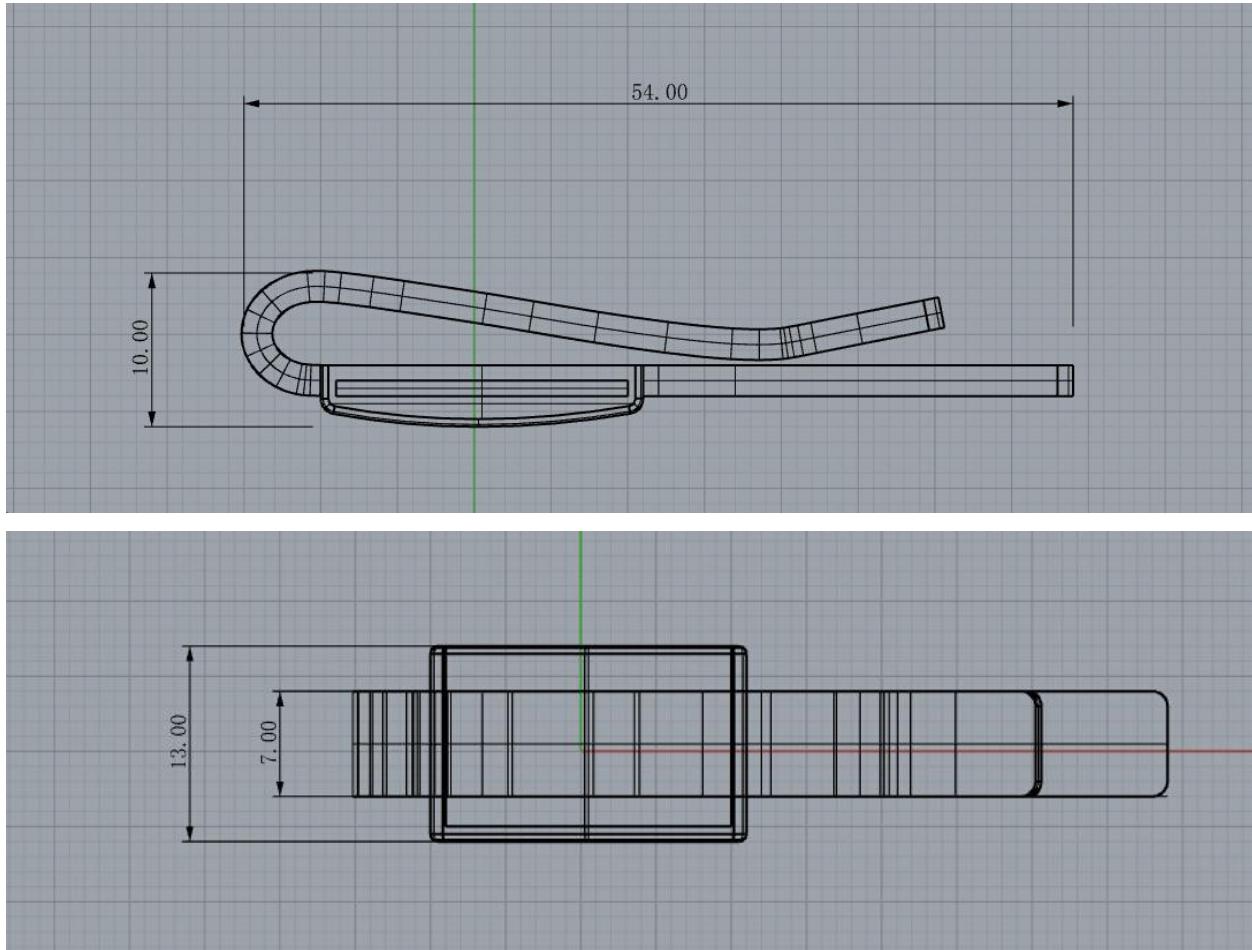
The tie clip form factor lends itself well to our objectives of professional development and is practical in its versatility. The association of the tie clip with the tie, and this added aesthetic element, create a professional image that associates the user with success and acumen in their domain. What is more, a tie clip is easy to carry and even in casual situation, the user can just clip it to their clothes. The design we chose, with a large button like decorative piece disguising the NFC chip, affords tapping the correct section of the tie clip against the phone. We also considered the size of the NFC chip in designing the clip, and developed a design that would not be bulky while accommodating and concealing it without limiting its range beyond practicality.

2.2.2 Design process

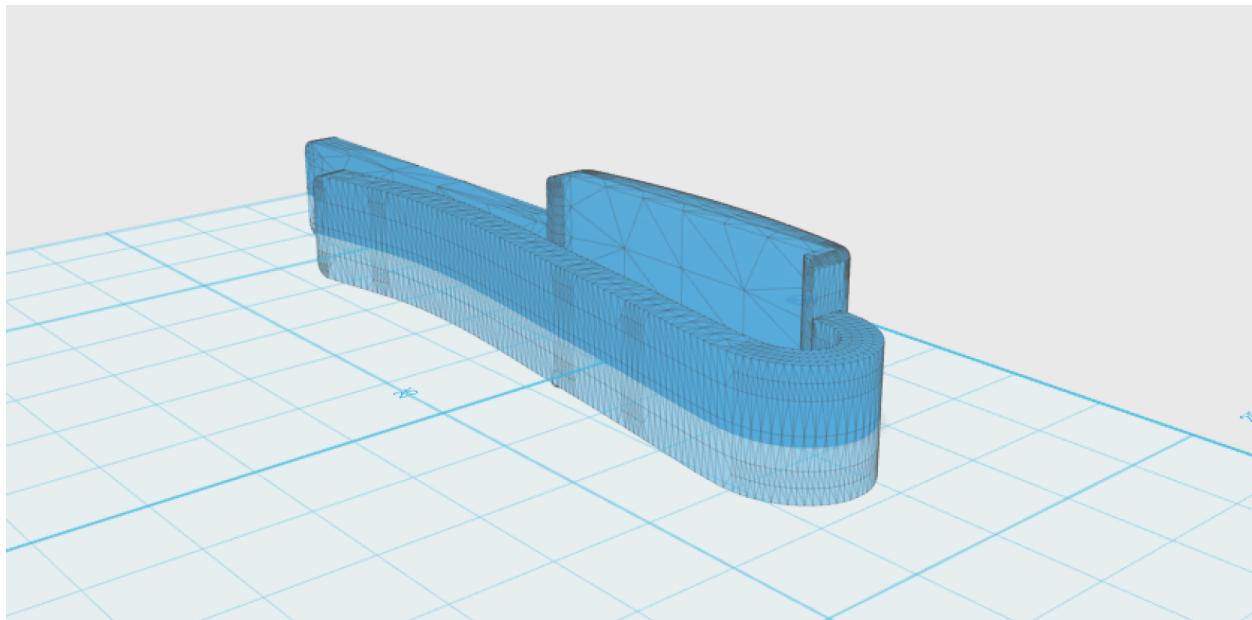
The first thing to consider is how to install a NFC chip into the tie clip. Here is the link of NFC chips we bought: <https://www.buynfctags.com/smartrac-midas-nfc213-clear-wet-nfc-inlay.html>

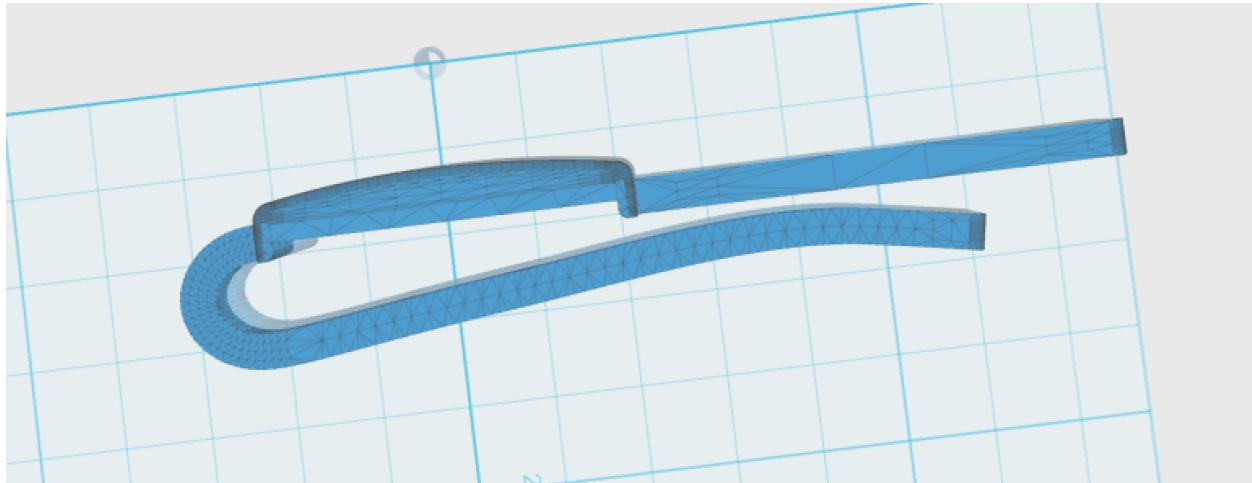
The size of a chip is 12*19*0.155mm. And the chip is flexible. We chose a button-like shape to contain the chip, which can let the chip stick at back and keep it flat.

Here is the size of the tie clip.



Here are the images of 3D design on computer. A slot was made to contain the chip.





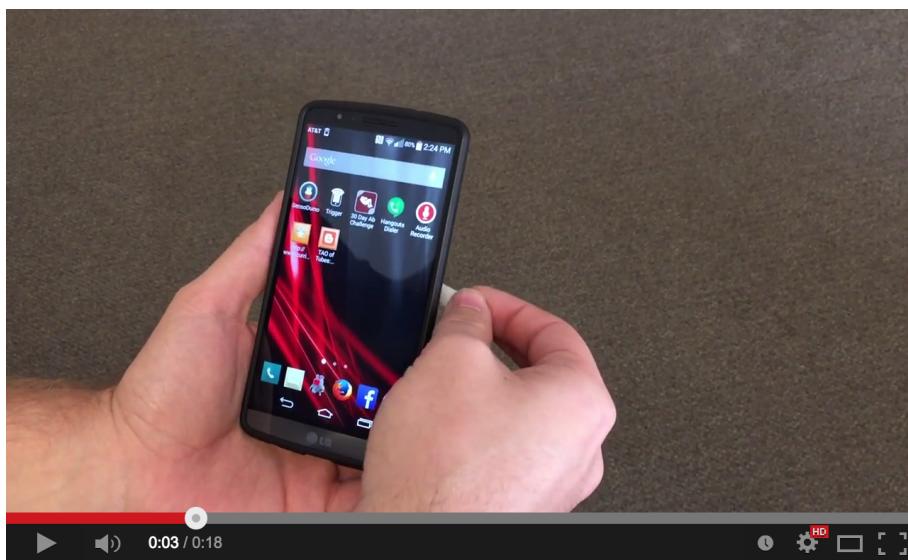
And we printed out by 3D printer. Here is the image of the final physical prototype. It turned to fix the NFC chips well and the tapping process was very fluent.





2.2.3 Testing

Here is the video of the test for the function of tie clip:



<https://www.youtube.com/watch?v=C1k5Ve0dPx&feature=youtu.be>

2.3 Implementation challenges

2.3.1 website implementation challenges

2.3.1.1 Front-end

One big implementation challenge for the website was doing the front-end layout work. It took a significant amount of time to configure the CSS stylesheets correctly, place the elements where

they should be placed, create a color scheme, and make sure the interface looked as appropriate on a smartphone as it does in a desktop/laptop browser.

Negotiation between the interface design and development within a limited period of time is the biggest challenge. As mentioned before, the goal for the prototype is for evaluation so we focused more on functions than stylings. Most stylings in the first version were changed by the affordance of the functions the system should achieve especially the back-end programming so we chose the most simple way to deliver the interfaces. In order to clarify all the functions, we eliminated possible confusions users may have if too much work done on styling of interfaces.

2.3.1.2 Back-end

The other big implementation challenge was the back-end architecture and making it mesh with the front-end architecture. Back-end architecture involved architecting the database from scratch, figuring out how to interface each page with its particular piece of the database, and figuring out how to organize the code so that everything was nicely segmented into discrete parts that addressed each part of the core functionality we needed to see on the front end. The back-end architecture even influenced the front-end architecture, imposing some constraints on the layout (i.e. the front-end needed to be architected in a certain fashion in order to make the back-end work effectively).

2.3.2 Physical prototype implementation challenges (VICKY)

2.3.2.1 Robustness

The design we implemented is printed out of soft plastic on a 3d printer, with no sharp corners, which makes it fairly safe, but not particularly robust. Two of our test models broke. This indicates that a different, sturdier medium may be necessary to take this design out of the prototype phase. Most tie clips are metal, which can be sharp, but could also be made out of a harder polymer or metal with capped edges. More and more aesthetically varied designs could also be provided to give the users greater choice.

2.3.2.2 Safety

One of the standards we considered in our design is the safety of the tie clip. Since many fathers using this clip may have small children, we would need to include a choking hazard with the tie clip. Although we found that many stay-at-home dads look for jobs once their children are

school age, and no longer at high risk for choking, we can see from these diagrams that the tie clip fits within the range of 31 millimeters that is used as the US standard for choking hazards.

2.4 Design justification

2.4.1 Rationale behind having a physical prototype

Simply having a website that allows stay at home dads to connect with one another isn't enough because stay at home dads need a more personal connection to other stay at home dads because they understand their situation and circumstances better. We needed to find a way to help them connect with other SAHDs on a much more personal level and we felt that having a physical object that they can use to establish an immediate connection would be much more beneficial. We wanted them to be able to develop connections immediately so that it would be easier to follow up later on. Often, when making professional connections, there is a delay in making online connections after making in person connections. Moreover, taking the time to exchange information or connect online interrupts the flow of conversation that allows people to get to know one another. Networking is, after all, about creating a social connection as well as developing a professional resource. This design removes the possibility of losing business cards or forgetting to add someone and creates a much more seamless, instantaneous process.

2.4.2 Why use a tie-clip?

Stay at home dads face quite a bit of stigma in society and drawing attention to the fact that they are stay at home dad's doesn't help us solve the problem of helping them integrate seamlessly back into the workplace. We first came up with the idea of having a physical device that would help stay at home dad's connect with other people in the industry and the first device we thought of was a bracelet as it is quite discreet and not unusual to be wearing something on your wrist. But as we thought through that and brainstormed more ideas for other physical devices we realised that a tie clip is completely discreet and it is impossible for a passerby to know that it symbolises anything or can be used for any purpose other than just being a tie clip. We were worried that the bracelet might transfer the stigma of being a stay at home dad from the person to the object (in this case the bracelet). Since we didn't want that to happen we realised that our design has to be something that a professional will have on them most of the time and does not draw any attention.

Tie clip enables instant online connection in person: removing time delay and the unwieldiness of collecting cards and adding people online later by just swiping tie clips across phones to add contacts via LinkedIn through our physical design. And tie clips will vibrate (we did realize it but can be achieved in the future) to let you know someone with the tie clip is in your vicinity, allowing you to check your phone to see if you have their connection.

We also want a design that is appealing to men, and has versatility and practicality. Tie clips can easily be stored on a wallet when not in use. However, we also intend to include several other designs on our website. In our hypothetical finished product, we will have the option for several different form factors, such as a keychain or cufflinks, that will provide our user with greater freedom of choice.

2.4.3 Exchange resources and information

Once a connection has been made on LinkedIn, it is much easier to stay in touch with other professionals and develop a larger network that would lead to finding better jobs and openings. It also allows the SAHD's to find people with similar skill sets. Using our system, they will be able to develop connections and exchange information later on, including contact information, tips and resources. Our database allows users to find others who have similar skills, mentors or mentees, and job listings. It allows people looking for a potential pool of skilled workers to see what kinds of jobs our users are looking for.

3 USABILITY SPECIFICATIONS

3.1 Low Learning Curve

The website is not hard to navigate and having even low technical skills will not hinder the user from being able to access the information that he needs. It should be useable immediately without a training period and fairly simple for users to use once they have become familiar with the interface.

3.2 Recovery from errors

The website is being used by fathers who may be distracted by their kids and so it should be robust enough to account for errors made due to that.

3.3 Effectiveness

The website should be effective enough to allow the SAHD's to be able to find the information that they need quickly and easily and ensure that they do not have to spend time navigating through or learning about the website. The intent is to allow them to connect online through a smooth social interaction, so there should be minimal explaining required to the subject who is receiving their information.

3.4 Flexibility

SAHDs are a population with diverse interests and goals. Some may have disabilities that affect the way that they access or use the product. The design should appeal to a broad population and be designed to be accessible by people with a wide range of skills and abilities. They also have a significant amount of control in their daily lives, which they will want to maintain. The website allows them to control the content.

3.5 Memorability

This group has many responsibilities to remember, and do not want to add to that load. They also may use the product repeatedly over extended periods of time, such as to apply for a part time job in the short term and a full time job later in the future. As such, the design should limit decay of learning.

4 EVALUATION PLAN

4.1 Introduction

Having established the specifications for how the users should be able to interact with the system, and the heuristics we will use to establish the usability of the system, we decided to use both expert evaluation to assess several specific dimensions of our design for safety and robustness, as well as accessibility, along with overall ease of use. Additionally, we will be conducting an observational study to give our subject population an opportunity to interact with our design and provide subjective feedback on the experience.

The first stage of expert evaluation includes a reflection of the information we garnered through the development process, and plans for future improvements that are not viable in the prototype

stages. These will be included in the conceptual framework presented for evaluation to a panel of our peers, who we will ask to consider both the existing and proposed models. Thus, the expert evaluators will be able to critique the overall system as we intend it, and provide feedback to fix any problems that need to addressed before the second stage of evaluation.

In order to assess the usability of our system, we have defined several benchmark tasks the users must be able to complete using our prototype. The functionality of these tasks will be necessary for the second evaluation stage. There are already several significant differences between our prototype and intended product. We have also found several key points in our assessments in preparation for external evaluation that will shape our design process. These are included in the implementation challenges.

The second stage of evaluation will be an observational study. This study will ask our users to use several aspects of our prototype while we observe their ability to complete benchmark tasks and semi-structured interview to collect demographic information and subjective feedback on their experiences. In order to clarify our research goals, we will operationalize several criteria including our population definition and means of quantifying subjective responses. Our research has clearly demonstrated an interest in job seeking among this population. This stage will give us insight into the use and reception of our product among stay-at-home dads looking for work. The real system will have additional features and choices that our prototype does not, and we will ask our users what other features would interest them as well.

4.2 Benchmark tasks

We selected several tasks that we wanted our users to be able to engage in, and make as accessible as possible for a wide range of users in order to test our prototype with a variety of abilities in mind. The basic functions of our product require the user be able to access the website, use it to exchange information with other engaged fathers, and use the tie clip to connect with someone outside of the system. The tasks that met these criteria were: creating an account, using the tip feature, using the feedback feature, and using the tie clip to connect via LinkedIn.

4.2.1 Creating an account

This feature is fairly simple. It requires the user create a username, password and add a LinkedIn account. For the purpose of user research, a LinkedIn account can be provided. In the actual system, rather than a prototype, individuals would be able to log in using their LinkedIn account, rather than having to add a URL. However, we will use the prototype with a provided URL to assess whether people are willing to answer the three accompanying questions when they create their account, and whether they find them beneficial. This feature requires the user to input their name and a URL, but the 3 questions, the answers to which can be selected from a drop-down menu, are optional, giving the users greater freedom and allowing us to see whether they are engaging enough to be utilized.

4.2.2 Using the Tip feature

The Tips feature allows the user to submit tips and view tips. In order to submit tips, they must be logged in as either a stay-at-home dad or an industry professional. Anyone (logged in or not) can view the tips. This feature is important because it provides a space in which website users can interact and build professional relationship. They can exchange information, and connect with more people who have used our system.

4.2.3 Using the Feedback feature

Only stay-at-home dads who have purchased a tie-clip have an account that can utilize this feature. The test account will be enabled for this feature. Users can submit and view feedback. This benchmark is important to see if users can and will respond to other users' tips and create an interaction. This process will enable them to build credentials as premium users, and develop the connections they've made via our physical system.

4.2.4 Using the tie clip to connect via LinkedIn

The User must be able to user the physical element to easily activate their virtual business card on the phone of an individual to whom they want to give their LinkedIn profile. The user must be able to initiate this interaction, using the phone of a stranger, and directing them to add them on LinkedIn. The user will have been able to watch a video of the interaction, as well as read a description of how to tap the tie clip on the website where they purchased the tie clip. In the prototype scenario, they will be shown the relevant site. The user will then ask permission to tap their tie clip against the phone of the person with whom they are interacting, and activate the

virtual business card. They can direct the person to click their LinkedIn profile and add them. With our prototype, this process takes two steps. However, the intended design would make it a one step process that would present the link immediately, reducing the possibility for error.

4.3 Expert Evaluation

We have used Jakob Neilson's heuristics for user interface design to ensure that our system is usable and easily understandable.

4.3.1 Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time. Whenever a user clicks on any of the options in the menu bar, it is easy to understand what the system is going to be doing because it is clearly labeled and clicking on the option will take the user to the appropriate page.

4.3.2 Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. We follow real-world conventions, making information appear in a natural and logical order. When a user wants to access job that have been posted on the website, he simply needs to click on the job's option. Clearly labelled options allows the user to think in the real world perspective and access only those options he requires.

4.3.3 User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Our website allows users to undo accidental changes that may have been unintentionally created. Simply going back to the previous page will allow them to navigate past pages that do not interest them or do not take them to the preferred destination.

4.3.4 Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. We do not use any jargon that may confuse first time users. We want the website to be intuitive and easy to use and keeping the pages consistent both in presentation and writing style we ensure that the users are comfortable.

4.3.5 Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. We check for potential error and present users with a confirmation option before they commit to the action.

4.3.6 Recognition rather than recall

We have minimized the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another.

4.3.7 Flexibility and efficiency of use

The website is flexible and very efficient to use as it does not take time to load and gives users the options to tailor their experiences according to their individual preferences. We use a chart for our tip interface to enable reading via screen reader. Though not all of our pages are in text format, those that are not contain alt text indicating that this is part of the prototype version and will be corrected in the fully implemented version.

4.3.8 Aesthetic and minimalist design

We have used very minimalist design that allows the user to focus on the task at hand without getting distracted by any unwanted text or visuals that may distract him.

4.3.9 Help users recognize, diagnose, and recover from errors

Error messages are expressed in plain language precisely indicate the problem, and constructively suggest a solution. The system is designed to prevent destructive errors. The finished product will give the user more options to correct and change the information they submit.

4.3.10 Help and documentation

Help information, though not explicitly provided, can be accessed through the homepage that tells you what the website is about and the various options provided. The prototype contains alt text indicating where a finished product will be made accessible. A finished version of the site would also include more help information incorporating evaluation feedback.

4.4 Observational Study

The observational study will be conducted with a small sample of engaged fathers from the Atlanta area so they can test the physical prototype in a lab setting. Based off of our research on our demographic, the definition of our population will be operationalized to men, over the age of 18, who speak and read English. They must have children, self-identify as stay-at-home or engaged fathers who are primary caretakers of their children, and be interested in working currently or in the future.

The study will be conducted in 3 parts. In the first part, the user will be introduced to our concept and the series of stages of the experiment. We will collect demographic information, and ask several brief questions about their career objectives relevant to our tool. In the second part, we will ask them to complete a series of tasks on the website and asses their ability to complete benchmark tasks. In the third part, we will ask them about their experience in a semi-structured interview.

Part 1: Questions

Demographic question:

Are you 18 years old or older?

Do you have children?

Are you the primary caretaker of your children?

Are you currently employed?

Are you seeking employment?

Will you be seeking employment in the future?

Social Media use:

Do you network in person?

Do you network online?

Do you use LinkedIn?

Part 2: Tasks

1. User creates fake account
2. User logs in with fake account
3. Submits tip

4. Searches for submitted tip
5. Views tip
6. Submits feedback
7. Views feedback
8. User views tie clip page and is given tie clip
9. User is asked to connect a linked in profile on a provided mobile phone

Part 2 details

Creating an account

To create an account, the user will be given a username, password and a URL to a LinkedIn account in order to keep the data anonymous. We will observe whether people are willing to answer the three accompanying questions when they create their account, and whether they find them beneficial. This feature requires the user to input their name and a URL, but the 3 questions, the answers to which can be selected from a drop-down menu, are optional, giving the users greater freedom and allowing us to see whether they are engaging enough to be utilized.

Using the Tips Feature

In order to submit tips, they must be logged in as either a stay-at-home dad or an industry professional. Then, enter the tip category and description. The username is automatically provided in the textbox underneath the “username” label, or, to submit anonymously, the user can remove their username from the textbox. After everything under the “submit tip” heading has been entered, the user presses the submit button at the bottom of the form.

Anyone (logged in or not) can view the tips. To view tips, enter something in any of the three fields underneath the “View Tips” heading. You can enter certain key words from the tip description, someone’s full username to search for them, or even the beginning of their username if you only remember the first few letters. The system will still find the username you are trying to search for. Once all the information has been filled in to your liking, click the “View Tips” button, and then a table will pop up.

Using the Feedback feature

Only stay-at-home dads who have purchased a tie-clip have an account that can utilize this feature. The test account will be enabled for this feature. Once a search for tips has been executed, if you are logged in as a stay-at-home dad who has purchased a tie clip, click the feedback button that appears to the right of each search result. The feedback button you click determines which tip you are providing feedback for. Upon clicking the feedback button, another form will pop up, prompting you to submit feedback. Fill out the form, and click the submit button (the left button). After you click the submit button, you will be redirected to the main submit and view forms. After using the search to navigate to the tip you just provided feedback on, you can use the “view all feedback” button to be shown a list of all feedback on that particular tip.

Part 3: Interview

Do you have any questions about how the tie clip works?

Would you wear the tie clip?

Would you want other wearable devices?

How would you rate the difficulty of using the tie clip to add a LinkedIn profile on a mobile phone?

Easy 1-2-3-4-5 difficult

Could you find the tips?

Did you find the website useful?

No, I would not use it 1-2-3-4-5 Yes this is very useful.

Did you enjoy using the website?

-Mention individual pages

Would you use the tip sharing system?

Would you use the feedback system?

What barriers did you encounter while using the website?

-Mention individual pages

When logging in?

When using the tip sharing system?

When using the feedback system?

Is there anything else you would have liked to see on the website?

Is there anything else you would like to tell us?

5 Conclusion

Our website, Engage, is a dynamic space in which engaged fathers can connect with other fathers, industry professionals and purchase our NFC enabled tie clips. Through our Tips system, they can trade information relevant to their job searches, and search for jobs. By integrating our site with linkedin, we avoid creating a redundant system, and instead add another layer of functionality. The physical element to our design incorporates a way of making technology less obtrusive and integrating a necessary technological process a more social experience.

We will evaluate both website and the tie clip electronic business card via expert user evaluation and having actual users try the system. The expert evaluation will help us consider edge cases that we may not be able to represent in the lab, and consider issues that might arise. For instance, we have already discovered that 3d printed tie clips are not particularly robust and sturdier material might be needed to create a device that will last, but still be cheap and easy to mass produce. Similarly, we intend for our website to be screen reader accessible, but have yet to fully implement readable text on all our pages. By documenting which elements of our site are still in prototype stages, and what can be improved upon, we hope to design a better product and understand the limitations of current technology. Ideally, we would create a tie pin that would vibrate in proximity with other tie pins, however, this element is not currently feasible with existing NFC technology which we are using. We do intend to prototype this element, and incorporate it into our design.

6 IRB Protocol

6.1 Helping Stay At Home Dads Network Professionally

Recruitment Language for Stay at Home Fathers

Researchers at the Georgia Institute of Technology are studying a new website and physical device created for stay-at-home dads in order to enable them to network online and share information related to entering the job market.

Stay-at-home fathers who are over the age of 18, able to clearly understand and speak English are sought to participate in a brief study to use our system.

Participants will use our physical design to interact with a website and answer a few questions about the system. The entire process will take less than one hour.

If you would like to participate in this experiment or have any questions, please contact:

Oriana Ott

oott3@gatech.edu

6.2 Consent to be a Research Participant, GA Tech College of Computing, Fall 2014

Project: Helping Stay At Home Dads Network Professionally

Investigators: Dr. Bruce Walker, Oriana Ott, Auzita Irani, John Hinkel, Yuan Gao

Purpose:

This form is to inform you about the details of this study and ask you if you would like to participate. Please feel free to ask any questions you might have.

Description:

The purpose of this study is to evaluate our website and tie clip. We want to see if our system will let stay-at-home dads who are interested in re-entering the workforce network professionally with greater ease.

Procedure:

We will provide each participant with the description of the study and consent form. No other identifying information will be collected, and consent forms will not be associated with data after collection.

Each participant will be asked to provide basic demographic information to verify their stay-at-home dad status and interest in the topic.

The participant will be asked to complete tasks. We will ask them to use a tie clip, website, and phone. We will give each person a username and password. We will ask a few questions about the experience and your opinions.

Participant Rights:

- Your participation in this study is voluntary. You do not have to be in this study if you don't want to be.
- You have the right to change your mind and leave the study at any time without giving reason and without penalty.
- Any new information that may make you change your mind about being in this study will be given to you.
- You may keep a copy of this consent form.
- You do not waive any of your legal rights by consenting to participate in this research study.

Participant restrictions: must be 18 years old or older, speak and read English. Participants should have children, self-identify as stay-at-home or engaged fathers who are primary caretakers of their children, and be interested in working currently or in the future.

Personal Information: Participants will be assigned anonymous log in data and no identifying information will be collected.

Risks: This study is expected to involve no more than minimal risks, no greater than the risk of harm encountered on a normal day-to-day basis while using a cellphone, website, or tie-clip.

Time: Experiment will last no longer than one hour.

Compensation: There will be no compensation offered.

Cost: There will be no cost to participate in this study other than your time.

Benefits: There are no direct benefits to the participant. They will be able to learn about a potential means of networking and sharing information with other stay-at-home fathers and industry professionals and help improve this system for future SAHDs who might use the system.

In Case of Injury/Harm: Reports of injury should be made to Dr. Bruce Walker (+1-404-894-8265). Neither the Georgia Institute of Technology nor Dr. Walker has made provision for payment of costs associated with any injury resulting from participation in this study.

Contact Persons: If you have questions about this research, call or write Dr. Bruce Walker at +1-404-894-8265; School of Psychology, GA Tech, 654 Cherry Street, Atlanta, GA 30332-0170.

Questions about Your Rights as a Research Participant: If you have any questions about your rights as a research participant, you may contact: Ms. Kelly Winn, Georgia Institute of Technology, Office of Research Integrity Assurance, at +1-404-385-2175.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study. Please note that you may choose to stop participating at any time, with no penalty whatsoever.

Name of Participant

—
Signature of Participant

Date

—
Signature of Person Obtaining Consent

Date