

# CS 194 Project Proposal

Project: Fringe

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## **EXECUTIVE SUMMARY**

In this proposal I will outline the inspiration, expectations, and plans for my senior project. I will be working in a three-person team alongside Howard Kao and Gerald Yu. We will be developing our senior project in conjunction with IBM at the Almaden Research Center in San Jose, California. Our senior project involves working with an existing system at IBM called “Fringe.” Fringe is a web-based application that was created primarily as a tool for IBM employees to gather background information and relevant occupational information on each other. Moreover, Fringe exists to assist IBM employees in creating social networks within the company as well as to provide them with a common forum for communication. The current Fringe system is insufficient in meeting these objectives because the interface is slow, cluttered, unintuitive, unreliable, and lacks the functionality to motivate employees to use it.

As a team our goal is to design an entirely new and improved web-based GUI for Fringe which will present the current functionality in a visually appealing and intuitive manner, while also adding functionality to make the user’s experience more worthwhile. Our team plans on fulfilling these goals in various ways, which include improving the layout of Fringe data, allowing users to personalize their information, and updating the data more frequently. We will also focus on improving the aesthetic appeal of the interface and the visibility of information by emphasizing information that is important and redirecting less important information.

With these goals in mind, a major risk of our project is that our team will fail in designing a GUI that provides valuable functionality and a comfortable interaction for users. In this case, IBM employees will not be motivated to use Fringe, thus rendering

the system useless. However, we will be in regular contact with Fringe users when designing the new GUI, which will help us build a new interface that will accomplish more than what Fringe currently accomplishes while exhibiting a sleeker and more intuitive design. I am also confident that regardless of the success of our final interface, this senior project will provide numerous experiences from which we will learn much about human interaction and communication in the workplace.

## **PROJECT OVERVIEW**

### **What is Fringe? Who are the users?**

This proposal describes an idea for a three-person team working on an industry-related project with IBM. The project described in this proposal is based on an existing system called Fringe that is currently in use by the employees of IBM at the Almaden Research Center in San Jose, California. However, IBM's vision is to eventually expand the user base for the system to include all IBM employees. Fringe is an interactive web-based interface for an employee database that gathers personal information about the company's employees, their skills/areas of expertise, their interests, the projects/activities they are participating in, and who they are working with. In an effort to provide IBM employees with a resource for professional networking within the company, Fringe integrates personal information from various databases and displays this information in a way that allows employees to search for specific people, to view and comment on other people's activities, and to view how their personal networks and relationships within the company overlap those of other employees. In this sense, Fringe exhibits the major features of corporate directories, blogs, wikis, and online communities such as orkut.

Fringe serves various purposes for the company's employees based on their roles within the company. For example, one employee working with other employees may be interested in constructing a list of activities pertinent to the team's projects, as well as list the employees he/she is working with. On the other hand, a manager may prefer to search for specific employees based on projects they are working on or skills they possess. For the most part, employees are interested in using Fringe to familiarize themselves with others who they have not yet met in the company and to establish some common ground with these people before interacting with them in the workplace.

### **A New Interface for Fringe**

Although Fringe is already a working interface, one of its downfalls is that while it has numerous features, many of these features were added to the system haphazardly, thus stripping the interface of its simplicity, usability, and connectedness. For this purpose, the proposed project idea for my team's senior project is to develop a new interface that improves upon Fringe. The goal of this project will be to design a completely new web-based GUI for Fringe that will give users a more natural experience, while also adding key functionality to improve the user experience. In designing this new interface, we will consider the current functionality of the system and the types of interaction it supports and use the insights gathered to modify, enhance, and redirect current functionality.

### **EXISTING INTERFACES SIMILAR TO FRINGE**

This section focuses on current systems and online communities resembling Fringe and motivations that these systems provide for improving Fringe. One of these

systems is called “Blue Pages” and is currently used internally within IBM. Similar public online communities such as orkut, Friendster, Myspace, and Thefacebook exist today and are used by people around the world.

### **IBM Company Blue Pages**

In addition to Fringe, IBM employees currently use a system known as Blue Pages. Blue Pages is an IBM employee directory that has been around longer than Fringe, and it is actually due to the limitations of Blue Pages that Fringe was developed. Specifically, the lack of interactivity of Blue Pages causes extreme difficulty in dynamically sharing activities and developing relationships within the company. The lack of functionality is exhibited by the excessive manual data entry required to maintain the system. Further, information displayed regarding a particular employee is similar to a Yellow Pages listing with static data entered by the employee at his/her own discretion. In this sense, Blue Pages’ data is sparse and lacks the means to perform actions such as connecting employees who share similar interests. A single person’s interaction with the system consists of either entering information about himself/herself into the database or reading another employee’s information, without being able to comment on that employee’s interests or activities. Fringe was developed as a major improvement to IBM’s Blue Pages, enhancing Blue Pages’ insufficiencies in meeting the company’s goals for social networking between employees.

### **Other Online Communities**

The environment and interactions that IBM expects Fringe to foster is similar to those belonging to major online communities today, only in a corporate setting. Such online communities include orkut, Friendster, Myspace, and Thefacebook. While each of

these communities has its own approach toward community-building, all share similar features: a member can list friends, search for other members, create a public profile, send messages to other members, and post comments regarding another member. Myspace even allows its members to post blogs. Thefacebook takes a slightly different approach to an online community by connecting people through social networks at colleges, in particular only extending membership to students from colleges supported by Thefacebook. Also, Thefacebook allows members to list current courses they are enrolled in, similar to Fringe's ability for employees to make posts regarding project-related activities they are currently involved in. Fringe is similar to these online communities in that it shares much of the same functionality, although Fringe is intended to be used for corporate rather than personal community building.

### **Why Fringe Has Not Been Pioneered Before**

Although online community building has gained popularity within the past few years, it has not been widely used in the workplace for various reasons. Because such a community would be difficult and risky to implement, it is not worth the effort to pursue, as many employees would not be motivated to use it. One of the main challenges is making the community valuable enough for the employee such that he/she will have reasons to use it. The community needs to provide functionality that is relevant both to the company and to the employee, and it needs to accomplish this in a seamless, coherent fashion that will attract rather than repulse employees. These issues are relevant to Fringe and provide insight into why a new GUI needs to be designed for the Fringe system.

## A NEED TO IMPROVE ON FRINGE

<b>Problem</b>	<b>Solution</b>
information is cluttered/inaccessible and labeling is unintuitive	rearrange data (spread out and hide data)
interface is flat and dull	use color schemes and graphics
data is unreliable and system is slow	update and pre-load data more frequently
ineffective layout of relationship matrix	change layout and add pictures
not enough useful functionality	add more functionality

*Table 1. Shortcomings of current Fringe interface and proposed solutions*

This section discusses the problems with the current Fringe interface as outlined in the Table 1. The following section will address ways in which our team will fix these problems with the new Fringe GUI.

### **Fringe Shortcomings**

IBM employees need an improved Fringe because the current web interface is extremely cluttered and confusing. Fringe's interface is flat, displaying a lot of text and links, but exhibiting poor labeling of sections and lacking any sense of inherent organization, causing much of the information to be inaccessible or unintuitive. Furthermore, the system's performance is slow and some of the data is outdated and therefore unreliable. As is, the system does not provide functionality that will motivate employees to actually use the system to network and communicate with others or to update their information in Fringe.

Upon first glance at a person's profile in Fringe, one will see a number of boldface sections crowded on a single page: *News, Activities, Project, Expertise, Publishing, Patenting, Org Chart, Peers, Starred Things, and Relationship Matrix*. It is not immediately clear what the differences are between some of these categories, let alone what some of them even mean, both from their labels and from the text that is displayed on the interface. Some of the labels are extremely vague and poorly thought

out; for example, what is a “Starred Thing”? The user is instead overwhelmed with an abundance of text and links, with hardly any pictures or icons and a dull interface where everything on the page is in black, blue, or green font.

Furthermore, Fringe displays a relationship matrix showing the ranking amongst employees who are participating in the same projects. These connections are displayed in a cluttered and unsystematic manner. The matrix is extremely hard to read, lacks pictures and is simply not diagrammed effectively. While there are far more interesting and effective ways to present this hierarchy, Fringe uses a fairly plain and visually non-stimulating approach.

### **An Enhanced Fringe GUI**

Due to these shortcomings of the Fringe interface, it is crucial that a new GUI is developed to replace the current GUI so as to provide a more enriching, enjoyable, and beneficial environment for the user. The new GUI will offer a more efficient and natural naming and grouping system for the various functions available in Fringe, making the interface much more user-friendly and approachable. Furthermore, it will have a much more systematic, intuitive layout and presentation of data. The GUI will also leverage the current functionality of Fringe and provide new enhanced features that will allow Fringe to offer more useful services.

### **PRELIMINARY SPECIFICATIONS FOR A NEW AND IMPROVED FRINGE**

This section provides a detailed explanation of the proposed solutions to the problems with Fringe, as outlined in Table 1. In particular, I will discuss the overall qualities and essential features of our team’s new and improved Fringe GUI. To solve

the problems mentioned, our goal is to design a new GUI for Fringe that will provide IBM employees a valuable, meaningful interaction while also maintaining less clutter than the current interface. In addition, we want the new GUI to give the user a sense of connectivity while providing coherence between the various parts of the interface, thus allowing him/her to easily identify the information he/she is looking for. As indicated in Table 1, we plan on achieving these goals by rearranging data, using color schemes and graphics, updating and pre-loading data, changing the layout of the relationship matrix, and adding more functionality. Some functionality we will consider is:

- Designing a message board for communication regarding activities
- Requiring users to log into Fringe
- Improving layout of the bookmarked profiles
- Offering multiple views, such as public versus private
- Keeping a history of past projects

### **Rearranging Data**

The new GUI will provide a much more usable and aesthetically pleasing interface for Fringe. Our team plans to achieve this in various ways. First of all, one of our main goals is to hide a lot of information that is currently displayed on the Fringe interface. We can hide information by dividing the content on the page displayed in Fringe between different tabs so that when the user clicks on a tab the contents of that selected tab will replace the current contents on that tab's portion of the interface. Besides tabs, we can also use links to navigate the user to a different page; for instance, a "Publishing" link can be added which will bring the user to another page listing an employee's publications. In addition, rollup and collapsible menus may be used to hide and display particular information.

### **Color Schemes and Graphics**

To give the new Fringe GUI more appeal, our team will include graphics and pictures of employees in the interface where appropriate. We will also choose a suitable color scheme or allow the user to choose from a number of color schemes when displaying particular types of information. By simply using a single color to denote a specific type of information, we can build a consistent interface where the colors will also help the user navigate through the information and quickly distinguish the information he/she is seeking.

### **Updating and Pre-Loading Data**

Our new interface will make sure that the data in Fringe is updated frequently so that users will not need to worry about accessing data that is out of date, which is the case with the existing interface. Also, because the interface is currently rather slow in performance, we will try to improve its speed by preloading what data we can in advance on the implementation side so that when this data is requested by the user, he/she does not have to wait for it to load.

### **Change Layout of Relationship Matrix**

Another major feature for the new GUI will be to include an understandable relationship matrix that provides a good visualization of the projects that are in progress and which employees are working on which ones. As is, the relationship matrix is a table that displays the employees of interest across the top and possible projects along the side. If an employee is participating in a project, the cell in the table that lies at the intersection of the employee and project is colored blue; otherwise, it is left as white. This current layout for the relationship matrix is poorly designed, since it requires a lot of space to

display a small amount of information. If dealing with many employees and projects, this table layout will take up a lot of space on the page. The new Fringe GUI will offer a more space-efficient and understandable way of displaying these relationships, including pictures of employees for better visualization.

### **Message Board**

One of the functions that will be possible with the new Fringe GUI that is currently not possible is the ability to track messages regarding activities through a message board. Currently, Fringe allows employees to post information about activities they are involved in, and other employees are able to reply to these posts with messages of their own. This essentially creates a threaded message, where employees can continue to post messages and reply to them. However, the current interface for Fringe provides a very unattractive, poorly laid out interface for creating new activities. It also does a poor job of organizing these posts in a coherent manner. For example, older messages appear under a section of the page titled “Activities,” while more recent messages appear under a section titled “News.” This convention is confusing and unintuitive. In the new GUI for Fringe, we plan on incorporating a better-designed message board with a better organized flow of communication. In the new interface, there will be a single location where the messages will be displayed with the corresponding responses, as well as a cleaner, more useful interface for adding messages to the message board.

### **Personalized Log-In Sessions**

A second function that will be implemented in the new Fringe GUI is the ability to track activity on the user’s behalf and highlight new items for the user across sessions.

That is, a user will be required to login, thus allowing us to use timestamps to remember when a user last reads a message or updates his/her profile. That way, if another employee makes a post to one of the user's activities after the user has logged out of Fringe, the user will be notified the next time he/she logs back into Fringe that he/she has received a new unread post. Likewise, users will be able to see that an employee has recently changed his/her profile information. These items will be highlighted, thus providing a more personal experience for the user every time he/she logs into Fringe. These notifications can be represented through the use of a noticeable font color (such as red), special icons (such as a flag), or specific text (such as "New" or "Updated").

### **Bookmarked Profiles**

Fringe allows a user to easily access profiles of other employees by "bookmarking" employees onto his/her personal homepage in Fringe, much like how Internet browsers allow users to bookmark important websites. This feature is useful when a user wants to keep track of specific people on a regular basis. These bookmarked profiles will always appear on the user's personal homepage as buttons, so that he/she will have easy, one-click access to an employee's profile instead of having to search for an employee every time he/she wishes to view that employee's profile. However, some employees may not want to bookmark any profiles at all, while others may want to bookmark many. Because of this variation, it is important to find a way to display the bookmarked profiles on a user's homepage in Fringe so as to accommodate any number of bookmarks. Currently, Fringe displays these bookmarks as buttons located in a vertical column where each button shows the employee's picture beside his/her name (where the user clicks the button to access the employee's profile); this design clutters the

interface if a user has many bookmarked profiles. Thus, the new GUI for Fringe will fix this problem by finding a clever way to display these bookmarks without creating clutter on the interface. We are also considering possibly extending this concept of bookmarking beyond profiles so that users may bookmark activities or other relevant information onto their homepage in Fringe.

### **Public and Private Views**

Another priority in the new Fringe GUI will be providing two different views for the user: a public and a private view. These two views are needed because not all of the information provided by Fringe is useful to every user. The public view will display an employee's information to other employees in the company who view this employee's profile, while the private view will display information that is private to an employee and that only he/she can view after logging into Fringe. Some information, like an employee's bookmarked profiles, make more sense to display only to the employee himself/herself rather than to the public. Other information, such as the publications and patents that an employee has, make more sense for the public view than the private view, since an employee should already know that information and will only ever need to edit/add onto it. For example, the public view will include such features as the message board, employee profile, publications, patents, and relationship matrix. The private view will include the user's bookmarked profiles, an interface for editing the user's profile, and the user's activities. Both the public and private views are very similar; it is simply a matter of choosing the appropriate information and content to display based on how the user is interacting with the interface and what he/she is trying to accomplish.

## **History**

A useful feature to have in the new GUI for Fringe is a history of an employee's work. After an employee has completed working on a project, instead of removing it completely from the employee's profile, it should move from the employee's list of current projects to a list of previously completed projects. This repository of previous project work will provide extra functionality for Fringe in that users may now search for other employees not solely based on current work, but also on previous work. For example, suppose a group of employees are working on Project X and Project X has been completed, so that Project X is not on any of the employees' lists of current projects, but rather in their list of completed projects. A manager who is interested in speaking with an employee who worked on Project X will now be able to search for these employees since the employees will still be associated with Project X as having worked on it in the past. Without a notion of a list of past project work, the manager would otherwise have had a more challenging task since Project X is no longer a current project.

## **RISK ASSESSMENT**

This section assesses the risks associated with pursuing this project. Unfortunately, it seems that the entire project is a risk in itself. The main risk is that our team will fail in producing a useful GUI. That is, one of the major problems with Fringe now is that the employees lack the motivation to use the system to communicate with each other; there is insufficient reward for their interaction with Fringe, so many of them do not care about creating a profile and writing about their current projects when this interaction is not required in their work. Similarly, in building the new GUI for Fringe,

our team will also face this very challenge of finding a way to encourage employees and to provide them with enough motivation to use Fringe to socially network within the company. While we may succeed in building a wonderful GUI, we may fail in creating an interface that users will use on their own accord. If this is the case, then our team will have failed to meet one of the biggest goals in our project.

The key to reducing this risk is always remembering to keep our users in mind. The more we interact with users and ask them what they wish to see in Fringe, the easier it will be for our team to meet their many diverse needs and ensure that we design an interface that is useful to them. Thus, the users will be more likely to use the system and we will have overcome this risk. No matter the outcome, our team hopes that we will at least be able to benefit IBM by providing them with an interface that is much more user-friendly than the current one, and which will provide more functionality for users. This in itself will be a major improvement upon the current Fringe system.

## **PROCESS MODEL**

During our project, we plan on maintaining a traditional up-front planning and specification method. Our team may perhaps try out pair programming, but for the most part we will be working individually while maintaining high collaboration with each other.

### **Preliminary Timeline**

This section provides an initial timeline for the major milestones for the proposed project. For the week of April 10, we will hold our initial meeting with the users of the current Fringe system, where we will present them with a list of questions we would like

them to answer regarding their experiences with Fringe. For the week of April 17, we will begin to sketch ideas for the preliminary design of the new GUI, create low-fidelity prototypes, and meet with users again to review our design ideas with them and gather their suggestions and opinions. For the week of May 1, we will implement our high-fidelity prototype, including a framework for the Fringe GUI, with message board and tracking of user changes through the login system implemented. For the week of May 15, we will implement the interface allowing a user to edit his/her profile, as well as the bookmarked profiles portion of the interface. Finally, on May 29, we will implement the relationship matrix. The rest of the week will be spent polishing up our design until the final presentation on June 3.

## **IMPLEMENTATION DETAILS**

Because our new GUI will be a web-based interface, we will be implementing everything with the technology of Java Server Pages, HTML, and JavaScript implemented in Macromedia Dreamweaver. We will also need to set up a Tomcat server to host these web pages. We are not expecting to use any hardware, although we will have to interface with the current Fringe system and the databases that are being used to feed necessary information to Fringe. Once we have access to the necessary databases and the current code base for Fringe, we will be well on our way to implementing our new and improved Fringe.