Engineering Management
Field Project

Development of an Online Network to Advance
Collaboration and Networking Among Students in
the Engineering Management Program

By

Joshua O. Coulter

Spring Semester, 2013

An EMGT Field Project report submitted to the Engineering Management Program
and the Faculty of the Graduate School of The University of Kansas
in partial fulfillment of the requirements for the degree of
Master’s of Science

Linda Miller
Committee Chairperson

Shannon A.S. Skoglund
Committee Member

Mike Kelly
Committee Member

Date accepted: 4-23-2013
Acknowledgments

A great debt of gratitude goes to my instructor, Linda Miller. Her encouragement in the development of this project, and all the projects that lead to this project has given me an avenue for applying the academic principles learned in the classroom, thus making the lessons more memorable, and far more enjoyable.

To Linda Miller’s marketing class who participated in the social network’s beta test, I appreciate the thorough testing, and insightful feedback. It was also a pleasure to have the opportunity to see the social network in operation.

A big thanks goes to my employer for supporting the continuous development of its employees through the tuition reimbursement program, which financed my education.

The foundation of this project was built upon the value of collaboration. I am therefore, grateful to my family, and my parish community for teaching me the value of collaboration in all aspects of life.

Lastly, I would like to thank my committee for taking the time to proofread my project, and offering their valuable feedback.
Executive Summary

The student body within the Engineering Management (EMGT) program at the University of Kansas is made up of professionals that bring tremendous value to the classroom by sharing their experiences in industry. Unfortunately, students in EMGT program often work full time, and their availability for collaboration and networking is limited.

Recent innovations in social networking tools have advanced the ways in which individuals are able to collaborate and network within communities. These new innovations offer new opportunities to advance education for the engineering management program by improving the efficiency and effectiveness of collaboration and networking by making classmates more accessible. The objective of this project is to determine the qualities a social network should have to help students effectively and efficiently collaborate and network, and then create a beta site to include these qualities for which students can test and provide their feedback for future work.

The result was a beta site that possesses the qualities, which will assist with collaboration and networking that were discovered in the literature review. Additionally, the project ended with lots of great feedback from students who had some excellent suggestions for improvement after spending time working on the site.
# Table of Contents

Acknowledgments .................................................................................................................. 1  
Executive Summary ................................................................................................................ 3  
Table of Contents ................................................................................................................... 4  
Chapter 1: Introduction ........................................................................................................... 5  
Chapter 2: Literature Review ................................................................................................. 7  
  Collaboration .......................................................................................................................... 7  
  Efficient and Effective Collaboration .................................................................................... 7  
  Making Collaboration More Efficient and Effective with Social Networking ..................... 7  
  Improving Collaboration By Using Feedback ....................................................................... 9  
  Improving Collaboration by Improving Discussions with Social Networks ..................... 11  
  Applying Customer Relationship Management Principals to Social Networks .............. 12  
  Qualities of a Social Network Which Will Help Students Collaborate .............................. 13  
Chapter 3: Background ........................................................................................................ 15  
Chapter 4: Procedure and Methodology ............................................................................. 19  
Chapter 5: Results ................................................................................................................. 25  
Chapter 6: Conclusions and Suggestions for Additional Work .......................................... 38  
  Conclusions .......................................................................................................................... 38  
  Suggestions for Additional Work ......................................................................................... 41  
  References .............................................................................................................................. 42  
Appendix A: Summary of Feedback from Students Self Guided Discussion .................... 43  
Appendix B: Feedback from Students Left in the Comments Forum .................................. 44
Chapter 1: Introduction

The student body within the Engineering Management program at the University of Kansas is made up of experienced engineers working for a variety of professional engineering firms. The interaction, and discussion among the students is a significant asset to the program’s value, as the students bring a wealth of experience to the classroom. Recognizing this, the faculty at the University of Kansas is interested in how the EMGT program can optimize this value by providing social networking tools that will increase the efficiency, effectiveness, and availability for students to collaborate.

This project will review literature to determine the qualities a social network should have to help students collaborate and network more effectively and efficiently. A plugin called BuddyPress will be used to turn WordPress into a development platform for creating a social network for students to beta test and provide feedback. WordPress is an open source content management and blogging system that is free for use and is the most popular blogging system on the web. Knowledge gained from the literature review will be utilized to determine which plugins in addition to BuddyPress will be selected to create the qualities of the social network to provide the desired attributes.
Objectives for this project include:

• Review literature for what qualities in a social network will help students effectively and efficiently collaborate.

• Work with web developer Benjamin Voran at frntnd.co hired by the University of Kansas to develop a beta social networking site that will:
  o Help students collaborate efficiently
  o Help students collaborate effectively
  o Improve students’ accessibility to collaborate with each other
  o Provide features that appeal to students’ interests, encouraging them to adopt and make use of the social networking site

• Make suggestions for future development of the site provided by feedback from students testing the beta site

Objectives for this project do NOT include:

• Implementing every idea learned in researching social networks

• Implementing the suggestions provided by the students in the feedback
Chapter 2: Literature Review

Collaboration

It is in our nature as humans to create. Through collaboration we achieve the goal of discovering resources, access and share knowledge, and communicate, and discuss with groups (Yang and Chen 2008). Collaboration therefore provides the tools necessary for us to accomplish our creations.

Collaboration is a process where knowledge is shared. Virtual community’s knowledge has both explicit and tacit components. Explicit knowledge is most commonly in the form of documents, and tangible artifacts that can be expressed in words, languages, diagrams, and formulas. In contrast, tacit knowledge is mostly in the forms of concepts, and intangible personal experiences (Yang and Chen 2008).

Efficient and Effective Collaboration

The most valuable collaboration occurs when members of the community are able to share both types of knowledge efficiently and effectively. There are two requirements for allowing this. There must be efficient and effective methods for:

- Finding relevant knowledge
- Finding relevant collaborators to interact with (Yang and Chen 2008)

Making Collaboration More Efficient and Effective with Social Networking

“Social software gives us the ability to amplify, extend, and make explicit the informal cooperative structures and processes that have evolved as part of human culture” (Institute for the Future 2007).
Finding relevant knowledge, and relevant collaborators to interact with can be made more efficient by using various social software tools that allow people to share both explicit, and tacit knowledge.

Explicit knowledge, which can be codified, represented, and shared asynchronously via reading and sharing documents, can be found easier within a community with the assistance of social software. **Tagging features** in social software, allow members of the community to quickly find relevant content. As members add content to the community they can tag it with relevant terms, so that when other members do a search for key words, they are able to find the content. In addition to being able to find relevant content, a **ratings feature** enables members to sort content for the most useful content as rated by other members in the community (Crocker 2011).

To assist in the generation of content within the community a **wiki feature** allows members to work together allowing everyone to contribute, and thereby reducing the burden of having a single individual write an entire article. Even easier is the **RSS feature** (really simple syndication), which automatically posts content in the community that is created on another site, such as a blog with a similar content (Crocker 2011).

Sharing of tacit knowledge which, cannot be explicitly described, and can only be perceived in human minds, and shared synchronously via discussions, and mentoring can significantly benefit from social software. Helping members in finding others in the community with whom they can collaborate assists sharing of tacit knowledge. Collaboration is most effective when a member is able to find a person in the community who has both relevant knowledge, and some degree of social relationship that can help establish trust (Yang and Chen 2008). The **membership feature** on social networks is a very effective tool for this. By permitting members to create a profile when they join the community, it allows members to search the profiles in the community for key words to quickly identify members who have relevant knowledge. Profiles also display friendship connections, which may help members identify any social relationships.
that may exist, that could establish trust through the association of a mutual friend (Crocker 2011).

The **group feature** is another tool that can also be a useful for helping members share tacit knowledge through collaboration. This allows members to connect through a niche topic in which they can exchange knowledge that is relevant to the group’s interest, and identify those who are experts on the subject matter (Crocker 2011). By having opportunities to interact with people in a community who have relevant knowledge, a member can develop know how, cognitive skills, and beliefs (Yang and Chen 2008).

**Improving Collaboration By Using Feedback**

Analysis of the collaborative learning patterns of the community can enhance self, and peer evaluation, thereby improving upon the efficiency, and effectiveness of sharing tacit knowledge. This in turn improves the efficiency of group activities, monitoring group behavior, and the individual attitudes of the members in the community. This type of analysis can also provide the means for tutors to support, and assess individual, and group learning outcomes (Caballé, Daradoumis, and Xhafa 2008).

Feedback in collaborative communities creates an awareness that has shown to have positive impact on the motivation, emotional state, and problem-solving abilities of members in online collaborative learning. Tracking the parameters outside the task itself, and giving constant feedback influences the participants in a positive manner by means of tracking the motivation, and emotional state of the group. Over a long period of time this tracking can display the relative amount of contribution to the group by others (Zumbach, Hills, and Reimann 2003). By understanding the level of contribution other members make, a member can more effectively, and efficiently evaluate other members as a source for tacit knowledge.

The feedback from cooperation that can motivate a group has three components. These three components of cooperation are coordination, collaboration, and communication (Caballé,
Daradoumis, and Xhafa 2007). Feedback for each of the components of cooperation is provided by group memory, user status, and resource state respectively.

Coordination involves the organization of groups to accomplish the important objectives of members such as workspace organization, group structure, and planning. This manages both members, and resources within a collaborative group so as to both organize, and coordinate the learning group, and enable tutors to monitor and assess the learning process (Caballé, Daradoumis, and Xhafa 2007). Essential awareness to support coordination can be provided through feedback developed by the memory of the group. Coordination can make use of persistent storage of information creating awareness by providing members access to documents and data, for later retrieval, and also provides the context in which it was created. This awareness is useful in making decisions, group organization, and social engagement used in coordination activities (Caballé, Daradoumis, and Xhafa 2007). The group feature on social networks can be set to allow any member to create, and coordinate a new group to help foster the community. The interaction within these groups is preserved, allowing members to review content that was shared, and the context in which it was provided. Additionally, the event feature can be a useful tool for members who are interested in coordinating a virtual, or real-world meeting, allowing members to interact in real time. This tool can help members make collective decisions about the important aspects of the event (Crocker 2011).

The second component of cooperation, collaboration, allows group members to share resources, which could be in the form of files, and applications in a collaborative learning environment. This sharing may be delivered synchronously, or asynchronously. Feedback is necessary for collaboration, since members are continuously modifying the state of the shared content. This feedback can be provided via continuous propagation of notifications relaying the current state of resources. These notifications can be triggered by the contribution of new text, comments, or the deletion of another member’s contribution (Caballé, Daradoumis, and Xhafa 2007). The activity feature in social network software is useful for providing the feedback of a
resource state, and thus the ability of a group to collaborate. The activity feature or activity feed broadcasts to all members of the community details of recent action in the community. Some networks allow members to customize their activity feeds to only provide notifications of the groups they belong, and organize the notifications into separate lists based on which group the activity is associated. This customization makes it easier for a member to filter out information relevant to them, and manage collaborating with multiple groups (Crocker 2011).

The third component of cooperation, communication, enables coordination, and collaboration to be achieved, and is therefore the foundation of cooperation. It manages the low-level interaction between two, or more members in a collaborative learning group to use both synchronous, and asynchronous approaches. Essential awareness to support communication can be provided through the feedback of the user status of other members in the community. By being aware of a current participants’ status allows members to recognize the availability of others to communicate (Caballé, Daradoumis, and Xhafa 2007). The chat feature on many social networks often provide some sort of indicator regarding who is currently online, and thus the user status of other members. Once a member receives an indicator that another member is online, the chat feature then allows closed one-on-one, or group conversations for synchronous communication (Crocker 2011).

**Improving Collaboration by Improving Discussions with Social Networks**

The discussion in a collaborative learning environment allows members to think about the activity being performed, collaborate through exchanging of ideas, propose new solutions, and justify or refine their own contributions, thereby acquiring new knowledge.

In a discussion there are three generic types of contributions. These types of contributions can be categorized as specification, elaboration, or consensus. The coordinator or instructor of the group initiates a discussion by contributing the specifications of the objectives for the discussion, such as providing a statement of the problem. This specification contribution by the
coordinator is then followed by an elaboration contributed by other members of the group. This is usually the contribution of a proposal, idea, or plan for reaching a potential solution. Other members in the community may add additional contributions that may continue to elaborate on the discussion by asking questions, comment, or agree/disagree with the prior contributions. The discussion finally terminates once the members have accepted a solution, and the group communicates the consensus through an agreement such as a vote (Caballé, Daradoumis, and Xhafa 2007).

The **forums feature** on a social network provides members with a place to have these collaborative discussions in which they can initiate, elaborate, and come to a consensus, which results in the acquisition of new knowledge. Posing a question, or posting a thought-provoking post for feedback from other members in the community can initiate discussions on forums by any of the participants in the community. These forums can provide a place for lively debates, or simple amusement. To ensure everyone’s contributions are within the code of conduct of the community, the administrator should lie out the ground rules for the discussion on the forum.

The **polling feature** on social networks is a useful tool for terminating the discussion by determining if the participants in the discussion have reached a consensus. Any of the members in the discussion can create a poll that provides a list of solutions provided by those who elaborated in the discussion. The other participants can then vote upon the solution they like best. The results will then indicate if the group has reached a consensus, or if the discussion needs to continue to elaborate upon the problem (Crocker 2011).

**Applying Customer Relationship Management Principals to Social Networks**

The use of customer relationship management (CRM) principals has recently been analyzed for suitability by universities and higher educational institutes dedicated to e-learning (Daradoumis Harabalus, Atanasi, et al. 2010). CRM is a model that has been used for managing a company’s interactions with customers, and uses technology to organize, automate, and
synchronize sales, marketing, customer service, and technical support (Shaw 1991). Technology allows experts to obtain, store, and analyze data on customer behavior, and its interaction with the organization. In education CRM is being used to acquire an understanding of student needs in terms of training, to help organize services tailored to their characteristics, and requirements, to improve the process of education, and get better results that reduce the number of dropouts (Neville et al. 2005).

To gather data there are basic web analytical packages available, such as Google Analytics, that can provide data about unique visitors, inbound links, and the amount of time people spend in the community. Having a record of the level of interaction within the community can be useful in evaluating changes that have been made to the community’s social network (Crocker 2011).

**Qualities of a Social Network Which Will Help Students Collaborate**

The probability of a social networking being successful in helping students participate in collaboration is best if it includes the following attributes.

- Students can efficiently and effectively find both explicit and tacit knowledge.
- Feedback is available so that students are aware of the motivation, and emotional state of the community.
- Feedback is available for students to evaluate their ability to efficiently, and effectively share knowledge.
- There are tools to assist students with the three components of cooperation: Coordination, communication, and collaboration.
- A process for discussion is available that allows students to contribute by either offering a specification, elaboration, or a consensus. This process provides students a learning environment that allows them to think about the activity being performed, collaborate through an exchange of ideas, propose new solutions, justify, and refine their own contributions, thereby acquiring new knowledge.
• Customer relationship management principles are utilized to acquire an understanding of student needs in terms of training, tailoring services, requirements, and improving upon the education process.
Chapter 3: Background

In order for a social network to be successful the faculty understands that the network must appeal to the students’ interests in order for them to voluntarily adopt this system. To ensure that the system meets the students’ interests, faculty member Linda Miller, has encouraged students to be involved in the development of the social network. Therefore, over the summer of 2011, prior to this project I conducted an independent study to investigate development platform options available for the University of Kansas to create a social network. It was the results of this independent study in 2011 and follow on studies that determined that BuddyPress would be used as the development platform for creating the beta site for this field project. BuddyPress was chosen because it would be capable of providing the features and structure that appeals to students, the University could retain control over the name and location of where it would be hosted, and the student’s technology fees could cover the cost.

The independent study in 2011 used a report published by Gartner Inc. titled “Hype Cycle for Social Software, 2010” to identify 16 different vendors as providers of social networking suits. In addition to this list, an additional six were identified in the book, “The Complete Idiot’s Guide To Creating a Social Network” by Angela Crocker. After reviewing each of these companies’ websites, and discussing the list with classmates, and coworkers to determine the most reputable options the list was narrowed down to three social networking suites for further evaluation. Before BuddyPress was selected Jive, Bluekiwi, and Wall.fm were evaluated. These three suites were scored on a scale from one to ten by myself for their ability to implement 15 different features that are common to social networks, which assist in either collaboration or networking. This evaluation was then used to create a comparison chart that compared those features of each suite to each other.
At the completion of the independent study in 2011, a marketing class in the engineering management program conducted a more in-depth evaluation. The class was divided into three groups, and each group was assigned to use one of the three social networking suites to develop a social network.

Early in the evaluation, BuddyPress replaced Bluekiwi, as Bluekiwi was unwilling to provide us with a free trial to evaluate. BuddyPress, one of the original suites evaluated, is an open source solution, and therefore was readily available. This worked out well as this provided us with a network suite in each one of the three categories of social networking suites that Angela Crocker uses to distinguish differences in suites: Generic label suites, white label suites, and custom label suites. Generic label suites are mass-produced generic products that have no identifiable brand. White label suites are mass-produced by one company and then rebranded to appear as if another company produced it. Custom label suites are made with a single customer in mind, and are sold exclusively to that customer.
Wall.fm, categorized as a generic label, is easy to create, and free or at a minimal cost. A notable drawback is that, the name of the site included the additional name “Wall.fm” and the site was hosted by wall.fm, creating some limitations. Should Wall.fm want to raise their rates for hosting the site the University would not be able to transfer the site to a new host. Unfortunately, although very functional, Wall.fm offered limited customization. Conversely, BuddyPress is considered a white label. It took longer to set up, the features were more robust, and the network itself was embedded in an existing domain name, allowing it to become part of a website. There are also more capabilities to customize the features within these networks.

The final suite to be evaluated, Jive, is categorized as a custom label. It offered the most flexibility, and personalized design. To create the network, we had to work with Jive to define our needs in order to build the network we wanted. Although fully customizable, this category of network suites was the most expensive, and time consuming to develop.

At the completion of the semester the students were pleased with all of the networking suites’ ability to create a network with features that met their interests. The free version of Wall.fm was found to be limited in ways the structure could be customized. There was some disappointment in having to include wall.fm in the name of the website, and having the site hosted on a server owned by Wall.fm was viewed as a potential limitation in the future. BuddyPress was determined to be a little more difficult to set up; however, it provided a lot more flexibility, and control over the domain name, and server in which it is hosted. Jive proved to have a lot of great features, and was really well structured. However, Jive develops customized networks for large corporations that require a solution for an entire enterprise. They would be able to provide us with an excellent solution, however it would require a significant amount of time for us to work with Jive to develop the network, and the expense for them to continue to support the network was beyond our budget. Technology fees collected from students are available for use to establish, and maintain this site. However, Jive’s solution exceeds this budget.
<table>
<thead>
<tr>
<th></th>
<th>Wall.fm</th>
<th>BuddyPress</th>
<th>Jive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Generic</td>
<td>White</td>
<td>Custom</td>
</tr>
<tr>
<td>Ease of creation</td>
<td>Easy</td>
<td>Moderate</td>
<td>Difficult</td>
</tr>
<tr>
<td>Expense</td>
<td>Free</td>
<td>Free</td>
<td>Very expensive</td>
</tr>
<tr>
<td>Customization</td>
<td>Limited</td>
<td>Endless</td>
<td>Endless</td>
</tr>
<tr>
<td>Domain name</td>
<td>Required to include wall.fm</td>
<td>No restrictions</td>
<td>No restrictions</td>
</tr>
<tr>
<td>Hosting</td>
<td>Required to use wall.fm</td>
<td>No requirements</td>
<td>No requirements</td>
</tr>
</tbody>
</table>

Therefore, it was determined that the best development platform for creating a social network for the engineering management program would be BuddyPress. BuddyPress would allow the flexibility to create a network with the features, and structure that would appeal to students. We would be able to retain control over the name of the site, as well as where it would be hosted. Lastly, it was within the budget for the University of Kansas to provide using the technology fees that students are charged.

With BuddyPress selected by the marketing class for the development platform for the social network, this project will create a complete social network for students in the engineering management program to beta test.
Chapter 4: Procedure and Methodology

This project began with the purchase of the domain name: kuemgt.com. The site was then given a home by purchasing space on a server from bluehost.com. Once the domain name, and the host were established, the website development platform WordPress was selected. WordPress is open source software, which means that anyone can write software to work with WordPress. Software written by individuals to work with WordPress is referred to as a plugin. BuddyPress is a plugin that allows WordPress to operate as a social network.

Once the plugin BuddyPress was loaded, and WordPress was operating as a social network, seven web pages were created.

- About
- Members
- Classes
- Activity
- THE BASELINE Blog
- Links
- Feedback
The template for each page allowed for a couple of widgets to be placed in the sidebar, and footer at the bottom. The first widget placed in the sidebar was a search bar that allows students to search for other members, classes, or other content. The second widget displays recent posts providing students with awareness of activity in the community. The last widget in the sidebar displays recent comments made by members of the community providing additional feedback. In the footer a widget was selected for displaying members who were recently active on the site, and two widgets for really simple syndications (RSS).
To give the social network some structure, and organization a menu bar was created. This menu bar allows students to navigate to each of the seven pages on the site, and keep track of where they are within the site. Each tab in the menu either makes a connection to one of the pages that was created for the site, or makes a connection to a web page external to the network via a custom link.
A list of desired features was created using lessons learned from prior work on social networks, and from the literature review. These features were then configured to work together to develop a site that would help students participate in academic collaboration. To find the plugins for these desired features, a search was conducted to find the plugins that would provide a site that encouraged academic collaboration. Individuals that develop plugins can choose to have their plugin listed on WordPress’s website where it can be sold, or given away for free. This website was searched for the plugins that contained the features identified in the list. The search for plugins on this site often resulted in more than one plugin, which would provide the desired feature. To select the best plugin, the description, ratings given by other users, and the number of people that used it were all taken into consideration.
As each plugin was loaded onto the site, it was tested to develop a better understanding of how it operated, and what its full capability included. Settings for each plugin were also adjusted at this time to customize its operation for the purpose of the community.

After all of the plugins were loaded onto the site, setting and permissions for users were selected from the settings menu. These settings determine how each type of user is and is not permitted to participate in the general, writing, reading, and discussions on the site.
A theme for the website was then created by the web developer and illustrator Benjamin Voran at frntnd.co. The theme was made to give the site a brand that would help give the members of the community a unifying identity.

Once the site was finished, it was presented to a class in the engineering management program for them to do beta testing. They were given an explanation for the purpose of the site, instructions on how to get started, and were asked to provide feedback. There were two opportunities to provide feedback. A place for comments on the site provided the first opportunity to give feedback. The second opportunity was a video taped self-guided discussion with no moderator so students could speak openly. Both opportunities for feedback were in a free format that did not direct the students with any specific questions. The feedback provided by the students was then placed in the Conclusions and Suggestions for Additional Work section of this report.
Chapter 5: Results

Following the principles learned from the literature review, and lessons learned from prior work with social networks, a social network was created that is loaded with features that will help students participate in academic collaboration. It is imbedded with lots of tools for students to make interconnecting relationships that will allow them to efficiently, and effectively find resources from which they can develop new ideas. Although it allows complex interconnecting relationships for developing new ideas, it is structured around a simple, easy-to-use menu with seven tabs.

As an introduction to the site, and to assist students in getting started in collaborating on the site, an “About” page was created, which can be reached by the menu bar, available for students to visit at anytime. The “About” page briefly describes the purpose of the social network, steps for getting started, and guidance for what the community is, and is not.

About

Welcome to the collaborative community for engineers. All of your classmates are working professionals who bring a vast array of experiences. This experience will prove to be an excellent resource for learning how to become a leader in your industry. This collaborative community will allow you to efficiently find solutions to your problems, and identify classmates with relevant experience for feedback to your ideas.
To help students efficiently, and effectively find other members to collaborate with, a membership feature was added. Questions relevant to the community were created for students to answer when they register with the community. The information collected is used to build a profile for each student.
By answering the profile questions, students will be able to easily search the member directory to find other members by their role as a student, faculty, or alumni, their undergraduate degree, current employer, job title, or by engineering management courses they have completed. This will help students to share tacit knowledge by improving their ability to identify classmates with the experience that interests them, and can provide the desired tacit knowledge. Additionally, it provides an opportunity to identify some possible social connection, which can improve a person’s ability to relate with the source of tacit knowledge, enhance their communication, and thus increase the efficiency and effectiveness of sharing knowledge.
To help students focus collaboration around specific topics, a **group feature** was provided, which allows groups to be created for the classes in which they are enrolled. This tool will help students with each of the three components of cooperation (coordination, collaboration, and communication), which helps motivate students to participate in the community. This feature, like the membership feature, also helps students share tacit knowledge. However, instead of allowing an individual search for a source of tacit knowledge, this feature provides a group the ability to connect through a niche topic, such as the topic of their class. These groups provide opportunities to interact with members who have relevant knowledge who can provide know how, share cognitive skills, and offer opinions.
A plugin called courseware was added to the site to help with the first component of cooperation, coordination. This plugin helps coordinate discussion forums, lectures, assignments, and schedules that are focused around the specific topic of the class. A list of the members in the class is also provided giving students an awareness of whom is participating in the class. This feature also provides a continuous record of student interaction, creating awareness for students by allowing them to review documents, and the context in which it was shared.

Included in the courseware plugin is an event feature that is useful for coordinating events happening on the site, or in the classroom.
A forum feature offers a discussion forum for every group that is created. The discussion forum for each class allows students to initiate, elaborate, and come to a consensus on a topic regarding an assignment, or lecture posted by the instructor. These discussion forums allow members to share documents, photos, and video. The group discussion forum is preserved, so students can return at a later time to review content that was contributed, and the context in which it was shared. The preservation of this information also serves as feedback regarding who is contributing, and who is not. To ensure everyone is contributing within the code of conduct, guidance regarding what the community is, and what the community is not, was posted on the “About” page.
To help students with the second component of cooperation, collaboration, there is an activity tab in the menu, and automatic email notifications that provides feedback to the students regarding the contribution of new content, comments, or removal of content, from either the individual groups, or the entire community. This is helpful for students to keep track of the state of a resource, as it is being modified. Collaboration is therefore improved by giving students an easy way to monitor the state of a resource.
Communication, the third component of cooperation, is advanced on the site by providing students the ability to interact with the community anywhere they go with the use of their mobile devices. This significantly increases the availability of other students to communicate. By improving communication, cooperation is improved, as communication also enables coordination, and collaboration.
Two additional tabs were included in the menu for the engineering management program newsletter, “The Baseline”, and useful links to provide students with easy access to some useful information resources for acquiring explicit knowledge.

Herb’s Column Fall/Winter 2012

Leave a reply

Herb’s Column

Three years in the making and the Master of Engineering in Project Management (M.E.P.M.) and the Masters of Science in Project Management (M.S.P.M.) have been approved by the Executive Council of the University and will soon be reviewed by the Board of Regents.

Introducing a new degree at a university has many similarities to industry. Our process engages users of all decision-levels and functions, enabling quality execution and alignment. We must:

- Show that the proposed program is related to the Board approved Mission Statement of the institution
- Establish the need for the proposed program
- Explain the competitive landscape for the program and our advantages
- Anticipate facilities, staffing and new equipment requirements
- Provide detailed description of the services (courses) that will be offered
The last tab in the menu is a blog titled feedback. This is a place where members of the community can provide feedback regarding the social network, so that the quality of the collaboration among the students can continually improve. It is anticipated that this social network will continue to have opportunities to improve, as new tools for collaboration will continue to develop, and become available, which will allow new ways to interact. See the appendix to review the feedback posted by the students in the beta test.
There are a few additional features on the site that are not displayed in the menu bar. To gain a better understanding of the students’ needs so that improvements can be made upon the site, the plugin “WordPress.com Stats” was added to the site. This plugin tracks the activity on the site, allowing customer relationship management principals to be applied. Statistical information is provided to administrators of the site, which would be faculty members. The statistics include information regarding the number of times a post, or page is viewed, the number of times a link is clicked, and the number of visitors the site has had over time. It also provides the search engine terms that were used to find the site, and what links exist on other websites that people used to get to the social network. This information could be useful in managing the members’ interaction.

![Graph showing views per day over time]

**Top Posts & Pages**

These posts on your blog got the most traffic.

**Today**

<table>
<thead>
<tr>
<th>Title</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes</td>
<td>25</td>
</tr>
<tr>
<td>Members</td>
<td>19</td>
</tr>
<tr>
<td>Register</td>
<td>3</td>
</tr>
<tr>
<td>About</td>
<td>2</td>
</tr>
</tbody>
</table>
Although the focus of the social network is for students to collaborate on academic subjects, it is recognized that students who make a social connection are more likely to participate in collaboration. Therefore, a really simple syndication feed (RSS feature) was added to the bottom of the site. This RSS feed was configured to monitor a blog called “Rock Chalk Talk”, and the newsletter “The Baseline”, so that whenever they develop new content, it will automatically post it on the social network. Thereby continually providing students with fresh new content to help maintain interest, without any extra effort from faculty. The RSS feature is also offering a source of explicit knowledge that can be shared asynchronously.

The social network also includes a tagging feature, which is another tool that assists in the sharing of explicit knowledge in an asynchronous way. By giving students the ability to tag content they contribute, the community can efficiently find the content they are interested in by searching key words that have been tagged.
Lastly, to help create a brand for this social network that would help establish an identity for those students who participated in the community, web developer, and illustrator, Benjamin Voran, created a theme for the website. A theme is the aesthetic appearance, and layout that WordPress pages are given to help give a website its brand.
Chapter 6: Conclusions and Suggestions for Additional Work

Conclusions

This project began by the insightful faculty at the University of Kansas recognizing the potential for improving the value of students’ education by supporting the use of the recent innovations in social networking tools. Because the students in the engineering management program are all experienced engineers working for a variety of professional engineering firms, they bring a lot of experience to the classroom, which happens to be a valuable asset to their education. Therefore, by providing social networking tools, the program could improve the efficiency, effectiveness, and availability of interaction that would enhance opportunities for students to collaborate, and thus advance the value of the engineering management program.

Therefore, the objectives for this project were to review literature to identify what qualities a social network must have in order to help students effectively, and efficiently collaborate. Then with the help of the web developer Benjamin Voran at frntnd.co, hired by the University of Kansas, implement a social network that would:

• Help students collaborate efficiently
• Help students collaborate effectively
• Improve students’ accessibility to collaborate with each other
• Provide features that appeal to students’ interests, encouraging them to adopt, and make use of the networking site

The project would then conduct a beta test with one of the classes from the engineering management program that would provide feedback. Students were given two opportunities to provide feedback. The first opportunity was through an open forum where students could leave comments in regard to the site with no questions guiding the discussion. The second opportunity involved a live; self-guided discussion among the students. The discussion was recorded so the
students could speak more openly without a moderator present. This feedback would then serve as a path for another project to begin additional development to continue improving upon of the engineering management program.

Websites today are not only dynamic in information, but also in the tools that allow individuals to interact with both content, and other individuals. This has shown to be true, because the innovations of social networking tools are rapidly developing more, and more ways to collaborate. This is due to in large part the open source coding that allows everyone to participate in the development of the next collaborative tool. Therefore, open sourcing is harnessing the power of collaboration, to create a feedback loop that is allowing individuals to develop new tools to collaborate, which are evermore efficient, effective, and accessible.

Given that tools to collaborate will continue to develop, a social network for the students in the engineering management program will need to be a dynamic network that continues to evolve, and will never reach a point of completion. However, the results of this project has proven to be a great advancement in providing students the tools to collaborate effectively, efficiently, and with greater accessibility.

Over the course of one week, the beta test had 21 participants who visited the site 1,630 times. The site successfully attracted a significant amount of traffic from the students, indicating a solid interest in the social network. Reviewing the distribution of traffic among the pages on the site for the day with the most traffic, 502 visits, the “members” page collected by far the most views, followed by the page for “classes”. The amount of traffic to the “members” page, and the fact that 77 friend connections were made suggests that the “members” page proved to be the greatest interest on the social network. This could be an indication that students’ first interest is to engage other members of the site, and perhaps if given more time would begin to have more engagement through the groups created for their classes.
## Top Posts & Pages

These posts on your blog got the most traffic.

2013-03-12

<table>
<thead>
<tr>
<th>Title</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>283</td>
</tr>
<tr>
<td>Classes</td>
<td>141</td>
</tr>
<tr>
<td>Register</td>
<td>25</td>
</tr>
<tr>
<td>About</td>
<td>22</td>
</tr>
<tr>
<td>Activity</td>
<td>16</td>
</tr>
<tr>
<td>Links</td>
<td>3</td>
</tr>
<tr>
<td>Activate</td>
<td>3</td>
</tr>
<tr>
<td>Wright's Law</td>
<td>3</td>
</tr>
<tr>
<td>Hello world!</td>
<td>2</td>
</tr>
<tr>
<td>Getting Started</td>
<td>1</td>
</tr>
<tr>
<td>Student Blog</td>
<td>1</td>
</tr>
<tr>
<td>Which program are you interested in?</td>
<td>1</td>
</tr>
<tr>
<td>Marketing</td>
<td>1</td>
</tr>
</tbody>
</table>
Suggestions for Additional Work

The use of WordPress for the development platform of the social network has proven to be very easy to use, and effective in achieving the objectives for this project. Therefore, the use of WordPress would be encouraged for the continuation of any additional work. Although there were lots of suggestions for improving the social network, most were details that were unrelated to the overall structure of the site. See the appendix to view the students’ comments. Additionally, the suggestions that did pertain to the structure could be implemented relatively easily. Such as using the “Activity” page as the default page rather than the “Members” page. Therefore, it is suggested that any further work use the social network created by this project, as the starting point for future development. The site developed could also be used in conjunction with a detailed survey for developing a better understanding of the students’ interests.

In addition to implementing the suggestions from the feedback provided by the students, additional investigation into the operation of the courseware plugin is suggested due to the fact that the responses of students to the assignments were not visible to the individual who was serving in the “teacher” role. Furthermore, additional tracking tools for additional statistics may be of use for evaluating the development of groups for classes. By identifying the groups with the most participation, those groups could then be evaluated for best practices for the development of future groups.

Aside from improving the web site, additional work could be conducted in developing guidance for instructors in regard to how to successfully foster, and moderate students collaborating in the social network. It is possible that this would initiate the implementation of some different teaching methodologies that would encourage collaboration among students. Ethics, security, and privacy related to the social network are some additional topics that offer opportunities for investigation in future work.
**References**


Appendix A: Summary of Feedback from Students Self Guided

Discussion

Students viewed the site as having two possible objectives. It could either be used for collaboration or networking. In terms of collaboration it would be competing with Blackboard, which holds significant opportunities for improvement. However, the use of blackboard will likely continue to be required by the University of Kansas, and therefore will create a burden for students to manage two collaboration tools. In terms of networking, there are a lot of strong alternatives to compete with, like LinkedIn. There was considerable interest in being able to network with alumni, however, there were concerns with alumni willing to maintain a profile after graduating.
Appendix B: Feedback from Students Left in the Comments Forum

1. Cleanly made. I’m able to view other users profiles and information as well as edit my own. Would be a nice place for collaboration with past/present classmates. I would suggest that the next phase added privacy or security options. Since I can view every member of this site.

2. While trying to create my account, I noticed that the website doesn’t allow underscores in usernames. I would say, it is one of the industry standards to allow underscores in usernames and also aids readability.

3. While trying to create my account, I was sent an email to activate my account. I didn’t see this email for a while, and thus, I ended up re-creating my account. After creating my account the second time, I still didn’t get an activation email. After further digging, I found that the emails were going to my junk folder. I would like to suggest that the emails should be worded in a way that it allows them to get past the junk filters on major mail websites like Yahoo and Gmail. Also, the website didn’t show any error messages when I was trying to re-create my account. The system should have notified the user that an account with the same username exists.

4. While on the EMGT 804 Group page, if I log out, the system logs me out but the window on the left doesn’t update. It still shows sensitive information regarding the members of the group. The expected behavior should be to take the person to the home page from where they can log in again.

5. While on my profile page and updating my notification settings, I saw that the ‘Save Changes’ button is grey in color. The grey color gives the impression as if the button is disabled. Suggest using a stronger color to make it apparent that the button is clickable.
6. If you search for the text ‘ku emgt’ in google, the first result that shows kuemgt.com doesn’t have any description about the site. The site meta data needs to be updated so that the website is better presented in search results.

7. If one is not logged in and uses the search box in the upper right corner, one can search for members, groups, forums and posts. This is essentially a security hole since anybody can get sensitive user data without having to create an account.

8. The site is very vanilla and white. Is there a plug-in that allows a person to choose a color theme for their profile?

9. The first page that the user is taken to by default is the “Member Directory” page. It might make more sense to take the user to the activity page since they would like to know ‘what has happened since they last logged in’ to the website.

10. After sending a friendship request to a user, the user didn’t get a notification.

11. Currently, the word ‘Classes’ and ‘Groups’ are being used interchangeably, which confused me a bit. For example, when I click on the ‘Classes’ tab. the next page contained a list of all ‘Groups’. This header should be updated to say ‘All Classes’.

12. The Baseline Blog page currently has a poll “Which program interests you?”. Below the poll, you can see characters like “]. It seems like a typo, which should be removed.

13. On the baseline blog, “leave a reply” link is posted under the header of the article. I would expect a link to “leave a reply” or “leave a comment” at the end of the article, as that is more intuitive, and goes with the flow of the page. One does not already have feedback for a page, unless they have already read it before.

14. The ‘Baseline blog’ page doesn’t have the same header as the rest of the site. Also, there is a link “KU EMGT” which is very small, hard to notice, and the only way to get back to the KU EMGT website. A new header should be added to take the user back to his activity/profile page.

15. I did not see a comment box to provide any feedback on the feedback page.
16. Introducing ‘chat’ functionality with friends, who are online, will be a great addition. This would be very similar to the ‘chat’ feature on Facebook, and should allow for real-time collaboration.

17. The ‘Login’ button on the login screen is grayed out. It gives me the impression that the username, or password entered is not valid, or the button is disabled to begin with. A more intuitive color scheme should be used. This problem is present with all buttons used on the website.

18. The search box on the login page was used to look for a member of KU EMGT group without logging in. This is a serious security flaw. One should not be able to see any personal contact information of the members, without logging into the website.

19. Members Page – I sent a friend request to one of the members of the website and the status on the “Add Friend” button changed to “Cancel Friend Request”. I navigated away from the page and then came back. The text on the button said ‘Add Friend” for the same person I had already sent the friend request to. This can lead to multiple friend requests being sent to the same person, and can be pretty annoying.

20. What is the ‘Home screen’ supposed to look like for this website? For example, clicking on the “KU Engineering Management Social Network” logo takes you to the member’s page. This was kind of un-intuitive.

21. Friend Requests are not working properly. I sent a request to another member who I knew for sure was online simultaneously. I never saw the request come in as a notification.

22. On the profile screen, I saw the following status message: “digant-bachani has been a member for 29 minutes ago.” The code that automatically generates this message needs to be smarter. The grammar does not sound correct.

23. The confirmation dialog presented after I tried deleting a post from my timeline, looked very unprofessional and needs to be updated for the following reasons: a) The confirmation message “Are you sure?”, should be more specific. b) The title of the message box, “The
page at http://www.kuemgt.com says” has no relevance to the action being performed.

Personally, I would do away with the message box since it will get annoying real fast.

24. The plug-in message towards the right hand side, had text that was going out of the text box.

25. Clicking on the ‘Baseline Blog’, took me to the blog. However, I did not see a way to get back to the EMGT website. The banner maintained throughout the website should be present on the blog page too.

26. ‘Feedback Page’ – Once I clicked on the feedback page, I saw the post by Josh. The post said, “Click on ‘leave a reply’”, but I did not see any such button. Instead, I clicked on the ‘3 replies’ button, which took me to other people’s posts.

27. On the ‘About’ page, the graphics used for the tour are outdated. It seems like a new layout for the website was chosen after the ‘Getting Started’ tour was created.

28. This is more a personal preference, but I agree that I don’t like the color scheme, especially the buttons that appear grey. Also, with all the communication, and comment sections, how hard would it be to add a spell checker button? I have no idea so just asking.

29. Just wanted to let you know, employers block streaming media, so we are unable to view some of the content from our offices.

30. Link for KU Blackboard?