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Developing an online social community for a Business Organization

Master's Thesis in the Master Degree Program, Interaction Design

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Gothenburg, Sweden, 2009

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An interaction design practice for building an online social community that encourages active user participation and efficient company-consumer communication

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ABSTRACT

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SUMMARY

In this project, I am aiming at providing a design solution for an online social community used for a company that would enable it to be a place for not only user-user interaction, but also user-company communication. The goal is to enable any given company to gain a better insight of its customers and hence provide them with better services. In this manner, the company will have a closer connection to its target users and the users will know the people behind the scenes better.

To achieve this goal, the current social community called “MyLavasoft” has been used as the base to apply the new design on. MyLavasoft belongs to the “Lavasoft” team (the original creators of Ad Aware: the original Anti-Spyware Software) and is aimed at “Community done right”.

Alongside improving the communications performed in an online community, the other objective covered in this project is: making a fun and user-friendly online social community, which would encourage active user participation and enhanced user loyalty to both the company and the community. This is to transform the end-users from passive recipients of products and services into active contributors of information.

Various Interaction Design methods have been used throughout the pre-studies, planning and the actual design process phases to split the problem at hand into pieces, and putting it back together in a new way. The result is then illustrated through a system structure and summarized as design guidelines that could be used not only for “MyLavasoft” in particular, but also for any other social community that is aimed at enhancing company-customer communication and active user participation.

The report is written in English.

Keywords: Interaction, Design, Online Social Community, Communication, user participation.

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Laleh Omalaki

Definition of terms:

1. HCI:

Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.

2. Online Communities

Cyber-spaces supported by computer-based information-technology, centered upon communication and interaction of participants to generate member-driven content, resulting in a relationship being built

3. System

Instrumentality that combines interrelated interacting artifacts designed to work as a coherent entity

4. Man-Hour

A man-hour is the amount of work performed by an average worker in one hour. It is used in written "estimates" for estimation of the total amount of uninterrupted labor required to perform a task. For example, researching and writing a college paper might require twenty man-hours.

5. Novice User

A beginner user of a system that has just starting interacting with it and is learning the system as time advances

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1. Introduction

In this section, you will become familiar with the scope of this project and get to know why it might be interesting for you to read this report.

This project is aimed at providing a design solution for the creation of a user-oriented social community for a software company called Lavasoft (www.lavasoft.com), which is providing services in the field of computer security and Spyware removal technology (incorporated into their major software called Ad-Aware). The company's main goal from this project is providing a platform in which the company customers and people interested in the fields of computer security, software development, privacy issues and user experience to have a relaxed, two-way communication with the company and with each other.

'Social communities' are places for people to interact and perform activities together with a certain common goal. In these communities, people meet up physically and have face-to-face conversations together. 'Online social communities' on the other hand are places for people to meet up virtually across geographical barriers through the Internet. Although the goal is the same in both scenarios, the facilities and the way of interaction are different. People meeting up in the virtual world through online communication might never see each other in person, but still would have a strong bond between them.

Online social communities vary in their nature. Some communities emerge when a group of people with similar interests interacts online, while others are born when a business organization provides a platform for interaction (Iriberry, Leroy, 2009). This project is focused on the second category of online communities.

Online communities of customers are believed to promote customer loyalty when customers perceive value in the ability to communicate with other customers regarding products and services they purchase or wish to purchase (Hagel, 1997). On the other hand, the employees within that organization get a better feeling for the user needs and requirements. Improved communication and trust, enhanced collaboration, access to expert knowledge and increased productivity are some of the benefits for an organization who would take advantage of online communities.

With that said, what this project is mainly aiming at is:

How to facilitate a business organization with an online social community, what functions to include and what user-side activities to support, so that both the company and users become happy end-users of this community and can directly and indirectly converse with each other.

One of my focuses in this project is building a user flow that is different in what is currently being introduced in social networks. In my opinion, what is being ignored in current online social communities is a design according to users' needs. Everyone no matter what they are using the online community for are being treated the same and are provided with the exact same facilities. Hence user knowledge is not promoted and utilized in the best possible way. Samples would include communities like Facebook (www.facebook.com) and LinkedIn (www.linkedin.com) in which users are all having the same facilities allocated to them no-matter what their original needs might be (although it is possible to expand the facilities a user can have in these sites through third party applications, but what I am referring to in here is the original tools users are being provided with through these sites).

Another focus in this project work is the emphasis on security issues. The theme of MyLavasoft is based on a more secure way of taking part in social activities and that element is not being forgotten in my design process. One of my goals is to propose an easy-to-use privacy management system that is interlinked with the overall use of the site. By enabling the user to have control over various parts of the

information he provides within the community, security and user privacy can be enhanced to a good degree.

This is a work done in the field of Interaction Design (see section 3.1 for an overview), in which by using the known methods in this field, it is in the intention of this project to design the system behavior, the environmental form (in part) and channels of interaction between the user and the proposed system to be (online social networking system).

1.1. Who are the users?

Users of this system are mainly the ones who need to interact with the company in one way or another. These users might not be necessarily the ones who use a specific product from the company, but also the ones who are interested in the same field as the company is providing services. However, this does not mean that the proposed platform cannot be used for normal social interactions between users without having common interests with the company: users can use the system to merely keep in touch with friends and have an online social presence.

On the other hand, the company itself will be a user of this system as well, by having interactions with the end-users through this community. This is not limited to a specific department within the company. All departments within a business organization can benefit from such social platform in various ways:

- Marketing and sales departments can find demographic information needed to know the end-users of their products better and orient their activities accordingly.
- The development team can get direct user feedback for error debugging and involve them in the product development phase.
- Customer Experience departments will be able to get help from knowledgeable users within the community to assist those who might have problems using company services.
- The testing department can find beneficial target groups for helping them in performing product tests and finding errors in various platforms and system environments.
- Human resources team will be able to target qualified users who could help the company in specific fields and employing them if needed.
- The legal team can converse with the end users regarding any legal issues that users might have and need to be addressed.
- The research team can find value in expanding its research field by the help of volunteers within the community.

1.2. What are my plans and intentions

By having my major in Interaction Design and my knowledge in the fields of human-computer interaction, user-centered design and computer science in general, I am hoping to be able to achieve a design solution that could be incorporated by Lavasoft in particular and business organizations in general who are interested in the integration of social communities into their business solution.

With that said, a starting point in this project would be to analyze the current well-known social networks to get to know why using the existing networks will not suffice for business use. Moving ahead, the next phase would be to gather a detailed requirements list from the company and target users to be able to pinpoint major design goals and the correct design path to follow. Some scientific design methods will be used in this regard to be able to obtain the most accurate results out of this research.

Based on the findings from the above, design solutions will be prepared and presented through mock-ups and written explanations of the system structure.

The intended result from this project is a social tool that would give the audiences a chance to have a shared understanding and a sense of community with a guided direction that the company provides for them. The outcome is expected to provide the business organizations with a good insight of how to best achieve an online community system that has both user values and company benefits within.

1.3. What this work is not about

One of the major questions business organizations ask themselves nowadays is that will the use of social communities for a business organization result in a significantly better business performance?

There have been companies like Opera that believed in the benefits of this addition to their business structure and created a special social networking space called My Opera

(<http://my.opera.com/community>) for their company while others decided to use the currently available and widely used social networks like Facebook (<http://www.facebook.com>) and Twitter (<http://www.twitter.com>) to create brand recognition for themselves. And there are companies that have not considered entering the world of social networking for their business solutions at all.

The project report you are currently reading provides design guidelines for companies who have already decided to facilitate their infrastructure with the usage of online communities and provides an overview of the benefits integrating various specific functions within these communities will bring about. This report is not a discussion about why online communities should be used for business organizations in the first place, but a demonstration on how it could be used and the best ways of their integration.

The reason for the above is that Lavasoft was already in the partnership phase of the user-centered design (Sutcliffe, 2002) (if we divide the phases of receptivity for user-centered design in a company to scepticism, curiosity, acceptance and partnership, Lavasoft is standing in the final step).

This is the phase in which the company has already believed and accepted the benefits of using a specific design process and has started implementing it, but still needs more input for adding more innovation and user-centeredness to the design. As a result, this project work is done on the basis of providing creative input for the current design process for building an online social community for organizational usage and backing up the solutions being recommended with reasons and rationales.

Another thing to note is that the solutions in this project will remain as design concepts and the technical requirements and procedures of their actual implementation are not taken into account or talked about in here. This is a work done in the field of interaction design and is not a development project, which would involve the actual programming of the system.

1.4. How to read this report:

What this report is about is exploring the current issues in customer-business relationship and interactions and providing a solution through facilitating online communities that would cover both company and user benefits. The proposed design in the end of this work will not be merely a platform for businesses to get to know their users better, but also a place for user-user communication both within and outside the barrier of the company activities and goals.

This report mainly aims at providing companies that have decided on perusing the path of facilitating an in-house social network with guidelines on how to best achieve this and what tools and functionalities to include so it becomes a beneficial application.

Identifying the correct time for integrating and introducing the proposed design concepts in this project depends on which life cycle the community is currently in and can only be identified by the ones who are

planning to create the social community. What you are presented in the following section is a brief introduction to all the coming chapters in this report, so that you could decide which chapters you are interested in reading on about:

In the **'Background'** section, you will be introduced to the currently available systems and technologies in the field of online communities and social interaction platforms (page 16). The current company this project work is being performed for will be presented (page 16) and after that two famous social communities that are on wide use at the time of writing this report (Facebook and LinkedIn) will be introduced (page 18). Finally the current problem domain that I am trying to solve in this thesis will be presented (page 19).

'Theory' contains references to and short descriptions of articles and publications that cover the major concepts that are discussed about or referred to in this work. An in-depth discussion about the community life cycles and when they will be reached is included (page 21) so that the reader could best decide in which life cycle his community stands and when to implement the design suggestions in this work. The concept of activity theory and SocioTechnical Capital (page 22) are also being presented here. This chapter continues with a description of the design methodologies that will be used later on in the design phase and can be a good reference for understanding those methods when they are put in to action (pages 24-26). And finally, an overview of the way I will proceed with this work is presented under the 'planning' section (page 27). The project time plan is also included in this part of the report.

In **'Pre-Study'**, a detailed description of the way I have used the methodologies introduced in the previous chapters will be talked about and illustrated through graphs and flow charts if applicable (pages 30-36).

The **'Action'** section is where it all happens: In this section, I start with a brief discussion about the designs that I decided to implement and the ones that would remain as concepts in this work (page 37). After that a short study that was done on Facebook and LinkedIn, covering their features and what works and what does not work as expected in them is brought about (pages 37-44). This pre-study is then followed up by an introduction to the 'Information Visualization' and the current categories of its use (page 44). This section then continues with defining the user roles within the community, which are the building blocks for the other design decisions. After that, the 'Rewarding System' is being described (page 48) followed by two sample-profile designs based on the user roles in page 53 (student profile) and 57 (Beta Tester profile). Then the use of Information Visualization techniques is put into action through samples (page 60).

After that, I proposed two major applications that play a great role in achieving the desired solution for the problem at hand in pages 65 (Friender Gadget which is a system for finding and interacting with friends) and 77 (Asker gadget which is a question asking and answering system). The evaluation performed alongside the design work for the Friender Gadget is also included in the same section. After that, a listing of some common design elements that could be used throughout these online communities as beneficial add-ons (page 97) is brought. The 'Look & Feel' section is where a small experiment around whether or not to add 3D design to the system is being explored (page 99) and the evaluation of it is summarized. This chapter ends with a short talk about what community terms are and what advantages their usage bring about (page 104).

In the **'Result'** chapter, the achieved concept as a whole from this work is described, followed by an explanation of the implemented system through a problem-solution diagram (page 105). After that, a series of guidelines are summarized and brought about in page 110. The quantitative data from the evaluations for the 'Look and Feel' theme design, the user surveys (questionnaire results from Students &

Beta Testers) and the results of the internal survey for the ‘Community Terms’ to be used for MyLavasoftware are included at the end of this section (page 112-120).

The ‘**Discussion**’ chapter contains my opinions about how satisfactory the results were and the experiments I had during this project work. My insights about the strong and weak points of this project are also reflected in this chapter (page 122). The possibilities for future work in the field of this project from the point this work is left are discussed in page 123.

This report ends with enclosing the ‘**Conclusion**’ chapter in which I summarize the project’s aim, the problem at hand and the solution I found for it (page 126).

Note: In order to make it easier to follow up on the design solutions and having a referencing system that would relate the explained problem at hand and the proposed solution, a list of all problems that this project is aiming to solve has been presented in section 4.4. Classification of Design Information (the diagram can also be found in Appendix E: Problem & Solution Diagram. Each problem has been given a specific alphabet (for user-side problems) or Greek numbers (for company-side problems). Later on, in the “Action” chapter (chapter 5), the section headings have been updated with the problem(s) that is being covered and fixed with that specific design proposal (alphabet or Greek Numbers are used as references).

2. Background

In this section, the existing systems in the field of online social communities will be discussed. The company this project work is being done for will be introduced and then two sample communities will be presented and their major constructing elements will be talked about. In the end, the current problem domain that builds the basis for this project is explained.

As mentioned earlier, online social communities are places for people to keep in touch with each other regardless of their real geographical location. These platforms facilitate the communication needs of a wide range of users from around the world and are places that enable information sharing, content production and socialization.

The number of online social communities is increasing and it seems like there is no stopping to this field. As new communities become alive, old communities might get forgotten and lose their reputation and active members. The online social communities that currently exist can be categorized based on their attributes (e.g. interests, work, play), supporting software (e.g. newsgroups, bulletins, team rooms), relation to physical communities (e.g. government, education, Hobbies) or boundedness (tightly, organizational intranet or loose) (Iriberry, Leroy, 2009).

One of the new branches of social communities being worked on recently are the ones created by special businesses to meet their internal and organisational needs. The idea of using online communities in the organizational level can be seen in companies like IBM who have utilized these communities to guide their product development: as the company began building a software solution, it decided that the input of a broad audience during the product development would be a success factor. As a result, an online community was created surrounding the product as well as making the source code available (Lewis, 2008).

The online communities for businesses are not always aimed at involving users directly in the product development by providing them with the source code and involving them in the actual programming (in case of software companies). Other aims include getting to know the customers better through engaging customers in individual dialogues or through indirect interaction by following up on user comments or complaints about a specific product or feature. The online social community that Opera has created (called My Opera <http://my.opera.com/community>) can be a good example of the latter case.

Based on the same motives, and to expand the vision of the company about the target user group, an Anti-Spyware company called Lavasoft has pursued the same path as Opera and some other software companies did in the hopes of having a better chance of customer-producer and also customer-customer interactions.

2.1. About the company

Lavasoft is a software company that works in the field of computer security and is the creator of an Anti-Virus/ Anti Spyware software called Ad-Aware. Lavasoft also provides other security software like Firewall, File Shredder and Digital Lock software to name a few. Having its headquarter in Gothenburg, Sweden and being run by 50 employees only, this small company has made a big impact in the field of computer security around the world.

The company's products are being used world-wide and with more than a quarter of a billion downloads

merely for its main product 'Ad-Aware', the company's target audience has grown more and more in the recent years.

The current software trends and market competitions in the IT industry has brought the Lavasoft stakeholders and decision makers to the realization that merely depending on customer feedback that are directly sent to the technical support group or performing usability tests on the finished products, the user-centered design factors will not be met to the desired level and the finished products will not be covering all the features the users might need. As a result, to be a better listener to the end-user needs and also to make them feel valued and respected, the company members decided to get advantage from the concept of social communities to have a better conversation with the product users and knowledgeable people in the field from all over the world.

Since the current available online communities would not provide the required level of communication and security the company needed, it was decided by the company to develop their own social community that could be tailored to the specific communication needs of the company and would be used as a tool to make a two-way communication channel between the company and end-users and letting users converse with each other and the company staff. The company decided on a name for the social community it planned on its creation: 'MyLavasoft'. The defined project scope for MyLavasoft was: "creating a new community for people interested in the field of computer security, software development, privacy issues, social communities and user experience". The goal the company wanted to reach at the end of this process was to get away from the company website from being a single-user experience by allowing the users to talk to each other and the staff. Ease of communication and fun was other mentioned aspects of the MyLavasoft project.

This was the starting point for the current master thesis project to take shape. I was provided with what the company's overall view about the project was and then based on this view; I formed the path to proceed with this project. It needs to be mentioned that the company already started the creation of MyLavasoft before my project was started. They needed my input for its further expansion and development for later stages. MyLavasoft is currently a work in progress. As already mentioned, the community creation has been started and some minor functionality has been added to it at the time I went ahead with this project. The creators are having the goal of providing a secure platform for online users to communicate with the Lavasoft staff and other members. The main objective behind the creation of "MyLavasoft" is to provide a channel for the users to become visible to the company in a friendlier manner. This would allow Lavasoft to know its consumers better and hence provide them with better services.

2.2. Current Online Social Communities

A good starting point for any given project would be to perform some research in the field the work is aimed at and figuring out what others have done to solve the same problem. Since the concept of using online communities for businesses is new and most of the work done in this regard will not be valuable enough for research purposes, I have decided not to limit my vision to business-related communities and instead to look into the most famous social communities that are for general interest and open for everyone to join.

As a result, I have focused on the following two online communities: Facebook and LinkedIn. I have chosen the above social communities for my evaluation purposes and as a pre-study in the related work part of my project since these social networks are the most popular online communities at the time of

working on this project and their success and failures could be lessons to be learned and acted upon. In the following sections, these two communities are introduced in brief and the major functionalities they provide their members with are discussed in short.

2.2.1. Facebook

Facebook is a free-access social networking website that was founded by Mark Zuckerberg (who is currently the CEO of the company) in 2004. The concept on which Facebook is developed upon is to enable people to communicate more efficiently with their friends, family and coworkers (Facebook, www). The site is open for everyone to sign up and currently has more than 250 million active users. Facebook provides its users with facilities like information sharing through the social graph (the digital mapping of people's real-world social connections), connection with friends and the ability to use main applications like Photos, Notes, Groups, Events and Posted items along with any third-party applications (that can be developed by anyone outside Facebook's internal developers)

The main components constructing a profile for a member in Facebook include:

- A wall to post messages to friends' profile page
- Profile Information section in which a user can add personal data about himself like: the network(s) he wants to be a member of, interests, education, work background and etc.
- A status area which is used by users to inform their friends of what they are doing, how they feel and so on.
- Internal applications like Photo Albums to upload and share personal images and tag other friends in them, Notes to share pieces of notes with others and etc.
- External Applications which are of a wide variety and are open to be developed by anyone if the general privacy policy rules are followed
- A chat service which is a new feature added to facilitate real-time conversations with online members
- Private messaging system that is used to send and receive private messages that are made invisible to everyone else (as opposed to the posts in the walls)
- Friends section that is used to search for, organize and add new friends

By having the vision of giving people the power to share and make the world more open and connected, Facebook has certainly become one of the greatest social forces of today's online social networking practices.

2.2.2. LinkedIn

LinkedIn is an online social community for those who would like to have a professional network contact. This network is aimed at connecting users on the basis of their professions in order to find new career opportunities, look for experts they can trust in the field they need help with and gain a better insight in the professional world. With over 43 million members from around the world, this community is one of the fastest growing communities based on interconnected network of experienced professionals (LinkedIn, www).

What LinkedIn provides its members with is:

- Searching for potential clients, service providers and subject experts through its 'Search People' or 'Companies' function
- Finding new jobs (through the 'jobs' function)

- Creating and collaborating on projects, sharing files and solving problems through the various applications it offers to the users like 'Huddle Workspaces', 'Google Presentations' and etc.
- Being found by other companies for business opportunities and jobs
- Finding new employees through posting for jobs (through the 'jobs' function)
- Getting involved in discussions in private groups (through the 'groups' function)
- Finding answers for your professional questions through the 'Answers' section
- Sending and receiving private messages in the network through the available online 'inbox'

Providing members with all the above professional facilities has made LinkedIn a revolutionary platform to "get in touch with someone" for either business purposes or job opportunities.

2.3. Problem domain

The main motivation for Lavasoft to look into the possibilities of creating a social community for the company was the decrease in the number of visitors to the company's website (as a result of having other download sites that the company's product can be accessed from) and hence weakened communication links between the company and the end user. The impact of this could be clearly seen in users submitting their views and opinions regarding Lavasoft products (whether positive or negative) in various external websites over the Internet. What this implicates is there was no central place on Lavasoft's website itself that users could talk about their opinions and problems and share it with others and the company.

Organizations always face the challenge of not being able to clearly hear the voice of their users and hence ending up with products that do not satisfy the user needs to the desired degree. But merely creating an online social community and sitting back and viewing users' talks and comments will not help. Users need to be supported and feel valued for what they do or say. They also need to feel comfortable using the community and have every possible tool that could help them act better within the community at hand, so that their efficiency level and activity values increase.

Creating an online social community in general is a big challenge, since the target users of the community are not usually available for face-to-face communication and involvement in the design phase as a result of their widespread expansion through geographical barriers. Hence, the requirement-gathering phase and a design that would best meet the audiences' needs will be something not easily achievable in this field. If the created communities are not encouraging enough or do not require much user involvement, the community's end of life will only be a matter of the birth of a new similar community.

The challenge here is to create a community that would not get this effect and remain lively even after the introduction of other new communities. Determining what are the success factors for an online community to remain lively and keeping its members, and designing according to these factors is essential for any research work performed in this field. So the big challenge in the field of community design, first and for most would be to keep it in the "maturity" phase of its life cycle and do not let it fall back (see section 3.2 for a description of social community life cycle and what "maturity" level is). If we consider the particular case of the design of a community for a business organization, in addition to the above mentioned problem, some other problem domains can be identified as well: making the end-users of the products of any organization to feel at home within the community so that they could open their heart freely to the company staff and other members and pinpoint their needs and service requirements to the company. The organization that is creating the online community needs to have clear goals from this creation and orient the community design and the tools that it decides to provide the members with according to both internal and external needs and the solution it wants to end up with by the creation of such a community.

At the same time, the created online community should not require too many “man hours” of the employees within the organization being spent on looking into the contents of the community to get the information needed. This is especially important for small organizations in which every “man hour” is highly valued and automation in most of the fields is a desired feature. This indication means that, the community should drive itself and users within the community should be able to help one another out without the need for staff involvement. The company employees and community followers should be able to get a feeling of the happenings within the community by spending a short time in it, and act quickly in the matters that require their attention.

And finally, the wide spectrum of the possible target users of such communities makes it a necessity to always have the ease-of-use factors in mind for all parts of the designed community.

3. Theory

In this section, an introduction to Interaction Design as a field will be brought. Some online community terms will be described and the methodologies used in this project will be presented which could be used as a reference for later chapters.

3.1. What is Interaction design

Since this project is done in the field of interaction design, it will be appropriate to bring a brief introduction to this field.

The concept was first invented when researchers in late 1970 and early 1980 started inventing how people would interact with the computers in the future. Later on, companies like Xerox Parc, SRI and Apple took the creation of useful and usable 'human interfaces' into account. The term 'Interaction Design' however was first coined by two industrial designers in mid 1980s, to refer to what they were doing while designing the first laptop computer. But it would be another 10 years before other designers rediscovered this term and brought it to mainstream use (Cooper, 2007).

Nowadays, in the computer world, Interaction Design is described as the discipline of clearing the mental model of what we are interacting with while using digital artifacts in the best possible way by applying techniques that would support reassuring feedback, navigability, consistency and intuitiveness in the interface between humans and those artifacts (Moggridge, 2006).

Gillian C. Smith (2006) has divided the languages of Interaction Design into four categories:

- 1-D: This is the words that are written in an interface
- 2-D: This is the graphics used in an interface to communicate a certain meaning to the viewer
- 3-D: This is the physical form of what is being looked at. Product Semantics fall in this category of Interaction Design language
- 4-D: Animations, sounds and movements within an interface are in this category.

A combination of the above languages is usually used in the design of interfaces in order to achieve the best practice in Interaction Design. As it is best described in "About Face" written by Alan Cooper (2007), Interaction Design is about synthesis and imagining things as they might be, not necessarily as they currently are.

3.2. Online community Life Cycle

Communities in general and online social communities in particular evolve in stages that have their distinctive characteristics and needs. This is important since community creators must take the requirements of each stage and the needs of members in that stage into account while building or enhancing their online social community (Iriberri, Leroy, 2009).

Various community stages have been introduced by different researchers. The staging this report will depend on is based on the same staging as is used in information-system life cycle (ISLC) and is as follows:

- **Inception:** at this stage, the idea for an online community emerges because of the need for information, support, recreation or relationships. At this stage, a focus for the community is created and rules of behavior and communication are considered.
- **Creation:** this is the stage in which the technological components including internet applications such as email, bulletin boards, discussion forums and etc. are created and the initial group of members can begin to interact

- **Growth:** this is when the members of the community select the roles they want to play and begin acting accordingly. Some members become leaders while others become followers or lurkers, who read messages posted by others but do not actively contribute to the community; some provide the information while others only use the information.
- **Maturity:** the maturity phase is the most important stage in a community's life cycle and is reached when the community is strengthened and trust and lasting relationships begin to emerge. In this phase of a community life-cycle, the need for a more explicit and formal regulations, rewards for contributions, groups of interests and specifically oriented discussions between community members are evident.
A successful community is the one that thrives to this stage by maintaining user interests either through adding new features or keeping up the current course of action which is believed to be user satisfactory enough for the community to iterate in the maturity stage.
- **Death:** a community can die when it starts losing members, faces poor member participations, the quality of its content drop or the contributions become unorganized. This can happen as a result of lost momentum or member interest in the community.

In each stage of a community life, members have a different set of activities and demands. The community creators need to identify the needed tools, features, mechanisms, technologies and management activities for each stage of the community life and develop the community to its new stage accordingly while maintaining the success factors implemented in the previous stage. Of course, the final stage (death), is something all community creators are trying to avoid by maintaining the community in the maturity level in one way or another.

3.3. Activity Theory

The concept of activity theory has been described as proceeding from the work of Russian psychologists Vygotsky, Leontev and Luria, who sought to understand human activities as complex, socially-situated phenomena (2005). Today, activity theory is most often used to describe activity in a SocioTechnical system as a set of six interdependent elements (Bryant, Forte, Bruckman, 2005):

- Object: the objective of the activity system as a whole
- Subject: a person or group engaged in the activities
- Community: social context; all people involved
- Division of Labor: the balance of activities among different people and artifacts in the system
- Tools: the artifacts (or concepts) used by subjects to accomplish tasks
- Rules: the code and guidelines for activities and behaviors in the system

Activity theory helps explain how artifacts and social organizations mediate action (Kuutti,1996). This concept will be used throughout this report to refer to various parts of the system being designed and talked about.

3.4. The SocioTechnical Capital

The notion of capital in general provides people with a resource that can be accumulated and allows them to create value for themselves or others. Productive resources do not merely reside in things or people, but also in social relations among people (Resnick et al., 2000). A network of people who have developed communication patterns and trust can accomplish much more than a group of strangers. This trust is what can be considered as a Social Capital.

The benefits of social capital can be seen greatly in fields like information routing, emotional support and action coordination. As Resnick discusses in his article (2000), in an era of information overload, people

need selective highlighting of what is important to them and then attend to it. People who have interacted previously learn about each other's interests and can hence bring useful information to one another's attention. Prior interaction can also help them in deciding which sources of information worth attending to. Emotional support is provided through social capital by means of the gained trust between people, which leads to sharing of personal information. And finally groups of people who have social capital are better able to make time-plans for their activities and work based on shared resources they find among themselves within the group.

Social Capital also brings about "productive resources" including communication paths, shared knowledge, shared values, and a shared sense of collective identity (Resnick, Bikson, Mynatt, Puttnam, Sproull, Wellman, 2000).

The term SocioTechnical Capital is used by Resnick (2000) as a subset of social capital, to refer to productive combination of social relations and information and communication technology. Coupling the technology advancements in the field of information and communication technologies with social practices has the advantage of providing a platform for people to act together in a more efficient way. SocioTechnical Capital is a resource produced as a side effect of technology-mediated social interaction. It can be accumulated and made available for people to create value for themselves or others. In addition to the immediate benefit from this technology-mediated interaction, there are productive resources that could be created from such online activities. The capital may consist of artifacts created from the interactions or relationships and practices developed through repeated social interactions. Use of the capital by a group to act collectively may not simply consume the resource but can reproduce more of it (Resnick et. al, 2000).

3.5. Design Methods

"A design method is any action one may take while designing" (Jones, 1992). The basic principle in choosing a design method for a design work is to choose a method that tells you what you need to know in order to proceed with your work, but you don't know.

The methodologies used in this thesis work have been retrieved from the "Design Methods" course book, which is written by John Chris Jones (1992). In this book, a design work is described as a three-stage process:

- Analysis (divergence): this is where the problem is broken into pieces
- Synthesis (transformation): the broken problem pieces are put together in a new way
- Evaluation (convergence): tests are performed to discover the consequence of putting the new arrangement into practice

In order to extend the boundary of the design situation at hand and enlarge the search space, the following divergence methods will be used: "Questionnaires", "Morphological Charts" and "Literature Searching". For transforming the problem into a new design solution, "Classification of Design information" method will be put into action. Since evaluating the finished designed system is a time-consuming process, it will not fit into the scope of this work and is hence skipped.

In the following sections, a brief description of each of the above-mentioned methods is presented.

3.5.1. Questionnaires

“This method is used to collect usable information from the members of a large population” (Jones, 1992). A questionnaire is the best feasible method of collecting accurate information that is widely spread among members of large target group. The most important constructs of this method is devising the questions and analyzing the received replies.

Before starting off with putting together a questionnaire, the questionnaire designer must have a clear objective of the questionnaire as a whole and the questions as a part and reflect it in his questionnaire (Wilson, 2007). He must also be persuasive to get people to answer the questions carefully and completely. The questions’ order is something that needs to be taken into account as well; as Dillman (2000) discussed it, the first question is the most crucial one and is likely to determine whether a person responds. Hence it is important for the first question to be easy to understand, easy to answer, interesting and be clearly connected to the purpose of questionnaire. In summary, the steps to follow in order to create a useful questionnaire for any given project are:

- Writing down the questions that relate to decisions the designer is in doubt about
- from the above, figuring out the critical questions that would help the designer understand user behavior and hence skipping the rest of the questions
- identifying the target group of the given system
- running a “pilot test” with the questionnaire to assure its validity before sending it out to the target group
- configuring the questions if needed after the pilot test and sending it out to the target group
- collecting and analyzing the answers

The question format itself can be categorized into the following groups (Conley, 1983):

- **Open-ended questions:** the participants are not provided with any pre-selected answers. They are free to answer the question with their own words and phrases. These questions provide the participants with the opportunity of expressing their thoughts, but also requires more effort on the user-side and might make them skip answering the rest of the questions after a while
- **Close-ended questions:** a set of pre-selected answers is listed and the participants either select one or multiple responses. These questions produce more uniform answers and take less time on the user-side, but the problems of limiting the user’s vision and the error-prone process of providing the right multiple choices by the questionnaire designer might occur.

3.5.2. Literature Searching

This method is used to find published information related to the field being worked on, which would influence the output of the work and is to be obtained without unacceptable cost and delay (Jones, 1992).

The following steps are usually involved in literature searching (as is described in the book “Design Methods” (Jones, 1992)):

- a. Identifying the purpose for which the searching of information is being performed and finding the kind of publications that match that purpose
- b. Selecting an appropriate information retrieval method(s) from the existing methods:
 - i. Consulting encyclopedias or abstracting journals
 - ii. Using library catalogues and indexes
 - iii. Consulting Librarians or industrial staff
 - iv. Consulting experts in the field

- v. Using keyword indexes in specialized organizations
 - vi. Consulting someone who have had the same search performed
 - vii. Consulting periodicals
- c. Constantly evaluating the choice of sources and data relevance to the field of the project
 - d. Keeping the references to the sources found and used
 - e. Keeping local collection of publications for rapid usage and referral

The major difficulty being faced in this regards is the poverty of the “intermediate language” of library classifications and indexes that influence the richness of the problems to which a specific publication could be applied to. Since the category title cannot cover sufficient amount of the content of a publication or complexity of a specific problem being presented in a document, the way one looks for information in a publication is of great importance.

As it was presented in a research work done by Greg Linden (www), it is a better practice to read the introduction part, related work, conclusion and future work of a chosen publication to understand the problem being focused on in that publication, why it is important, what has been tried and what still needs to be tried.

3.5.3. Morphological Charts

This method is used to widen the area of search for solutions to a design problem (Jones, 1992). Morphological Charts are useful for encouraging divergent thinking and avoiding the novel solutions for a design to be overlooked. To proceed with this method, one starts off by:

- Defining the independent functions that the system is expected to perform
- Creating a matrix of sub-solutions for each function listed above
- Selecting a single sub-solution for each selected function

If the designer is familiar with the problem domain, the above process will not take much time. The major difficulty that might be faced in this process might be in the first step: “identifying the essential set of functions that are expected from the system and are independent of each other”. It might also be that selecting the best set of sub-solutions be prolonged if the matrix becomes too big (e.g. 10x10 matrix) (Jones, 1992).

3.5.4. Classification of Design Information

This method is used to split a design problem into manageable parts (Jones, 1992). This strategy is a great time saver in unfamiliar problem situations, since it enables the designer to match his view of the problem to reality at a very early stage, hence avoiding the risk of starting off in the wrong track or skipping parts of the problem to be solved from the beginning. To follow this methodology, one should:

- Record each item of information found during exploring the design situation. This information can be found through methods like:
 - Literature searching
 - Interviews/Questionnaires
 - Observations
 - Design Assessments
 - Brainstorming

- Sort the items found from the previous step into alternative sets of categories until a set best matches one's own view of the problem and the recorded data. A few things to keep in mind in this stage are:
 - All the found items should be accommodated into the categories and no item remains uncategorized
 - Most of the items need to be clearly belonging to one category only
 - The chosen categories should indicate the major determinants in the field of the problem being researched
- The selected categories then can be used as a basis for indexing information, splitting up the problem for parallel or serial working and also as a tentative identification of variables and their relationships
- The classification could be revised later on if contradictory evidences accumulate

Following this method enables the designer to classify randomly acquired data about a problem in such a way that strong relations between items occur only within categories and weak relations between items occur between categories (Jones, 1992). Such classification is of great benefit since each category of problem domain can be dealt with in parallel with others.

3.5.5. Strategy Switching

In designing, the main difficulty being faced by designers is the incompatibility between spontaneous thinking and planned thinking. The 'Strategy Switching' method is used to permit one form of thinking to influence the other and vice versa. Mann (1963) describes long periods of systematic thinking that are often necessary in designing as 'crank-turning or grunge' and the shorter imaginative periods as 'creative peaks'. To be able to remain in control of the design situation as a whole and also have the ability to change mind in parts, one should follow this method.

'Strategy Switching' has the great benefit of avoiding both the inhibiting effect of too rigid a strategy and the ineffectiveness of too flexible a pattern of design thinking (Jones, 1992). This will allow the designer to have both planned and unplanned thinking to take place during his design work. Steps to keep in mind while following this procedure are:

- a) The main strategy to use should be selected in the first stage
- b) While this strategy is being used, a separate record of spontaneous thoughts that occur should be taken note of
- c) Working with the planned strategy should be continued and when the impulse to think about a topic is spent, the strategy can be then resumed
- d) The output of both the spontaneous thinking and the originally planned strategy should be reviewed and compared
- e) If there appears to be a contradiction between the outputs, then one should consider to either ignore the spontaneous thoughts or switch to a new strategy to fit in the new pattern of thought
- f) This procedure should be repeated until the typical strategy without any contradiction with spontaneous thinking is obtained

3.6. Planning

After identifying the problem domain and the scope of this project, and reading the related work and current theories in similar fields, the planning phase was begun. In the beginning of the planning phase, the following steps were identified as the main action points for this thesis work:

Phase 1: Gathering both user-side and company-side requirements through using a methodological approach in the field of requirement gathering

Phase 2: Categorizing the objectives and the specific details of the problem domain based on the gathered requirements from the previous phase

Phase 3: Providing a design concept that would solve the problem at hand based on the objective and categorized problems

Phase 4: Creating design sketches as needed to summarize the created design concept

Phase 5: Evaluating the proposed design through low fidelity prototype(s), using interactive flash mockups

Phase 6: Finalizing the report

The first phase from the above 6-step action points would require some investigation in the field of requirement gathering techniques and methodologies. The Design Methods book (Jones, 1992) could be used as a valuable resource for looking up the available methods and the fields they are mostly relate to and are used in. Requirement gathering from the company would be aimed at contacting the managers and the main decision makers within the company. For the user side requirement gathering, it is decided to use the current active members of the Company's beta center since they are the only users available to send out questionnaires or surveys legally and by their own permission. To add a wider spectrum to the target group and have some creative views on the requirements for the social community at hand, the Interaction Design students at Chalmers University would also be contacted and involved in the requirement gathering phase.

In the second phase, again available design methods would be referred to in order to best categorize the possible found design details and problem specifications from the previous phase.

The third step would be based on the findings from the previous steps and through quick sketches of the overall view of the way the intended system and its various parts should be. This phase would contain a checklist of what the system needs to have in order to meet those mentioned problems and needs of the user and company side members.

When an idea of how the system should look and what needed features should be considered is shaped and summarized, sample views of the main proposed functionalities or features of the system would be designed by using graphical software. My skills in using Adobe Photoshop and Illustrator software for product sketching and system designs would make this step an easy-to-achieve goal. The produced static images of the system design would be followed by a description of their functionality and can be a base to communicate the intended design structure to the reader of this report.

In the final stage, the system as a whole would be made interactive for user evaluation purposes and identification of the success or failure of the proposed design. Since I am an experienced user of the Macromedia Flash software, this interactive mockup could be created in Macromedia Flash and be programmed using the Action Script programming language.

At the end, the project report including the discussions, results and conclusions from this project would be finalized and put together (the main body of the report will be written during each of the phases).

The above stages for this project fit into the following time-plan:

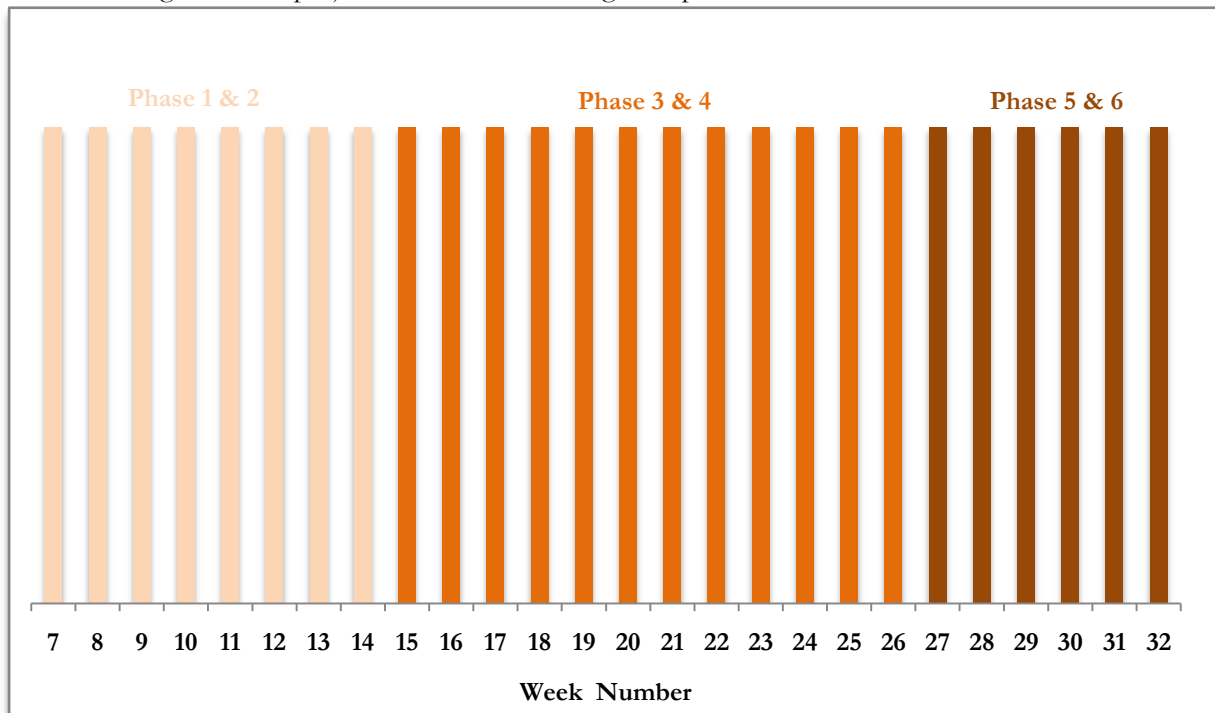


Figure 3.1: Project time plan

4. Pre-Study

In this section, the methodologies that were used in this work and the way I got advantage of them are described in detail.

In this project work, in addition to the traditional design methods like sketching, design by drawing etc., I brought some new design methodologies into play using the methods described in a book called “Design Methods” (Jones, 1992).

As the author of this book advised in the preface, the way I chose the methods to be used was through reading and comparing the aim of different methods for each section (divergence and transformation stages) with the goal of finding methods that would fit into the scope of the problem at hand and the time given to reach a solution. Below, you will find a description of the way I proceeded with a specific method for my design work. Some of the methods were new to me (e.g. classification of design information & strategy switching) while I have had experience in using the others (e.g. questionnaires, morphological charts).

The selected methodologies for the “divergence” phase include:

- **“Questionnaire”** (section 4.1. Questionnaire): this method enabled me to obtain an overview of the needs and interests of both the company and the people who would be using the system to be designed and hence put me in the right track and mind-set throughout the design process.
- **“Literature Searching”** (section 4.2. Literature Searching): Alongside the “questionnaire” method, the “Literature Search” was used to find published information in the field of online social communities and user behaviors in communities in general in order to widen my view of the situation and the existing problem domain and available solutions.
- **“Morphological Charts”** (section 4.3. Morphological Charts): this method enabled me to define the functions that were planned to be implemented in the system and choose the best set of sub-solutions for the design problem

The “transformation” phase happened when based on the findings through the divergence phase, new design solutions and ideas started to emerge:

- While using **“Classification of Design Information”** (section 4.4. Classification of Design Information), the main part of the transformation occurred. In this stage, I categorized the design problems gathered from analyzing the data from the previous stage into manageable parts. These categories had two main advantages:
 - The overview of the problem became clearer and finding solutions became more efficient and meaningful
 - Referencing in later parts of this report was made easier when a design solution for a problem at hand was being referred to in the “Action” section
- **“Strategy Switching”** (section 4.5. Strategy Switching): since throughout the design process, some new limitations or opportunities were opened or figured out, it was inevitable for a change in strategy to happen. In order to take the most out of this change and also keeping a record of previous happenings and what has lead to the new one, “Strategy Switching” method was used.

And finally the “convergence” phase was performed in a low scale practice. Since evaluating the finished design is a very time consuming process and could not fit into the scope of this project, it was not possible to perform evaluation tests in a large scale and using interactive mockups as was originally

planned. The only evaluations performed were: trying out the Friender gadget internally in the company through a Flash mockup (see section 5.7.4. Evaluation results and Redesign of the Friender) and a look and feel test that was performed through sending out four different sets of design solutions for using a 2D or 3D environment (see section 5.11. Profile Look and feel).

The time limitation resulted in the evaluation phase of this project to remain unfinished and it could be a separate project work done by other students or researchers (see section 7.2. Future work).

4.1. Questionnaire

The first step in the divergent thinking path was to determine what the company wanted and expected to reach from the design solution I was to provide them with. To find out all the different angles of the problem, a questionnaire was sent to the Lavasoft stakeholders and managers. The company-wide questionnaire can be found in **Appendix A**. The main purpose of this survey was to gather all the requirements from the company's perspective for this online social community: MyLavasoft.

At the meantime, a second questionnaire was sent out internally but this time to everyone in the company. The focus in the second survey was on using unique terms and labels for different sections of the community. This step was a part of the strategy to make MyLavasoft unique and different from existing social communities. After this stage and gaining an insight of the internal needs and expectations of the company for MyLavasoft, the next step was started: identifying the user requirements and this could only be done through sending out a second set of questions to selected users from the target group.

The starting point for this phase was identifying the general design decisions (made after analyzing the data from the company-wide survey) and grouping the set of critical information through the analysis. The questions were formed and the best questions were selected based on identified critical information for the design phase. After that, with the help of the company and evaluating the current users interacting with Lavasoft through the available communication channels, the target groups for MyLavasoft were identified which are as follows:

- The company's paying customers who are using a product purchased from Lavasoft
- Beta testers who take active part in testing the company's products
- Freeware users who use the free version of Lavasoft products
- People interested in the field of security: researchers, students, security advisors etc.
- People with a general interest in the computer field

From the above-mentioned target users, the ones that would be accessible to send out a questionnaire to were detected and decided upon: Students & Beta Testers

The questionnaire that was sent out online to "Students" and "Beta Testers" can be found in **Appendix B**. As it can be seen from the questions in both Appendix A and Appendix B, it was decided to use open-ended questions in the questionnaire so that participants would have a chance to express themselves and their needs without any limitation. This information identified to be helpful for investigating the current user behavior and their opinion about the existing design features in online social communities.

It should be noted that both questionnaires (company-wide and target group) were sent out online. It was decided not to ask the questions through an interview to avoid the stress factor involved in interviewing and also providing the target group with enough time to think and discuss their interests and choices.

The results of the survey and how they impacted the design decisions can be found in later sections in this report (see section 6.3.2. Students Survey Result and 6.3.3. Beta Testers Survey Result)

4.2. Literature Searching

My main goal from looking into various literatures was to find the current problem domains that exist in online social communities and built applications in that regard and the way various research works tried to overcome or relate to them as a future work. Having this focus helped me a lot in narrowing down my search domain and hence ending up with specific publications that would be beneficial to my work; before, during or after the actual design process being performed.

Besides social communities in online form, I did research in the field of real social communities and human behaviors in real-life social situations. This part of the literature search was aimed at familiarizing myself to the human needs and behavior in social context.

With that in mind, I used both the Chalmers Library publications available on social communities and also I became a member of the ACM (Association for Computing Machinery) digital library, which brought me with a great source of published articles in the field of Human-Computer Interaction and specifically in the online community field. Since this method of Literature Search brought me with enough beneficial findings, I did not need to use the other methods of searching for literature as is described in section 3.5.2. Literature Searching part b.

To be able to use the found articles in an efficient way and reduce the time cost for looking back for certain information, I applied a numbered index on all the articles I used for my project and referred to them in the same way (same numbering structure) as in this report. This numbering however was revised in the final version of the report in order to match its referencing structure with international standards.

4.3. Morphological Charts

I decided to use this methodology since I expected it to provide me with a nice overview of the system functions and help me in choosing the best solution for any expected function. I started off by listing all the expected functions that the system was required/expected to perform (this information was gathered from the questionnaires that were sent out internally and externally in an earlier phase and the findings through the “Literature Searching”). I need to mention that the list of all the functions that an online social community can perform is endless; hence I am only listing the set of functions that fit into the scope of this project:

- user-user communication
- user-company communication
- information exchange
- information update
- utility providing
- privacy control
- security
- group activities

Although the above function set might look limited compared to what the system becomes in the end, this can be considered as a logical occurrence. The reason is, other functionalities were considered and added to the system after other methods like “Classification of Design Information” and “Strategy Switching” was put into action. For the above function sets, a set of sub-solutions were created and put into a matrix as shown in Figure 4.1

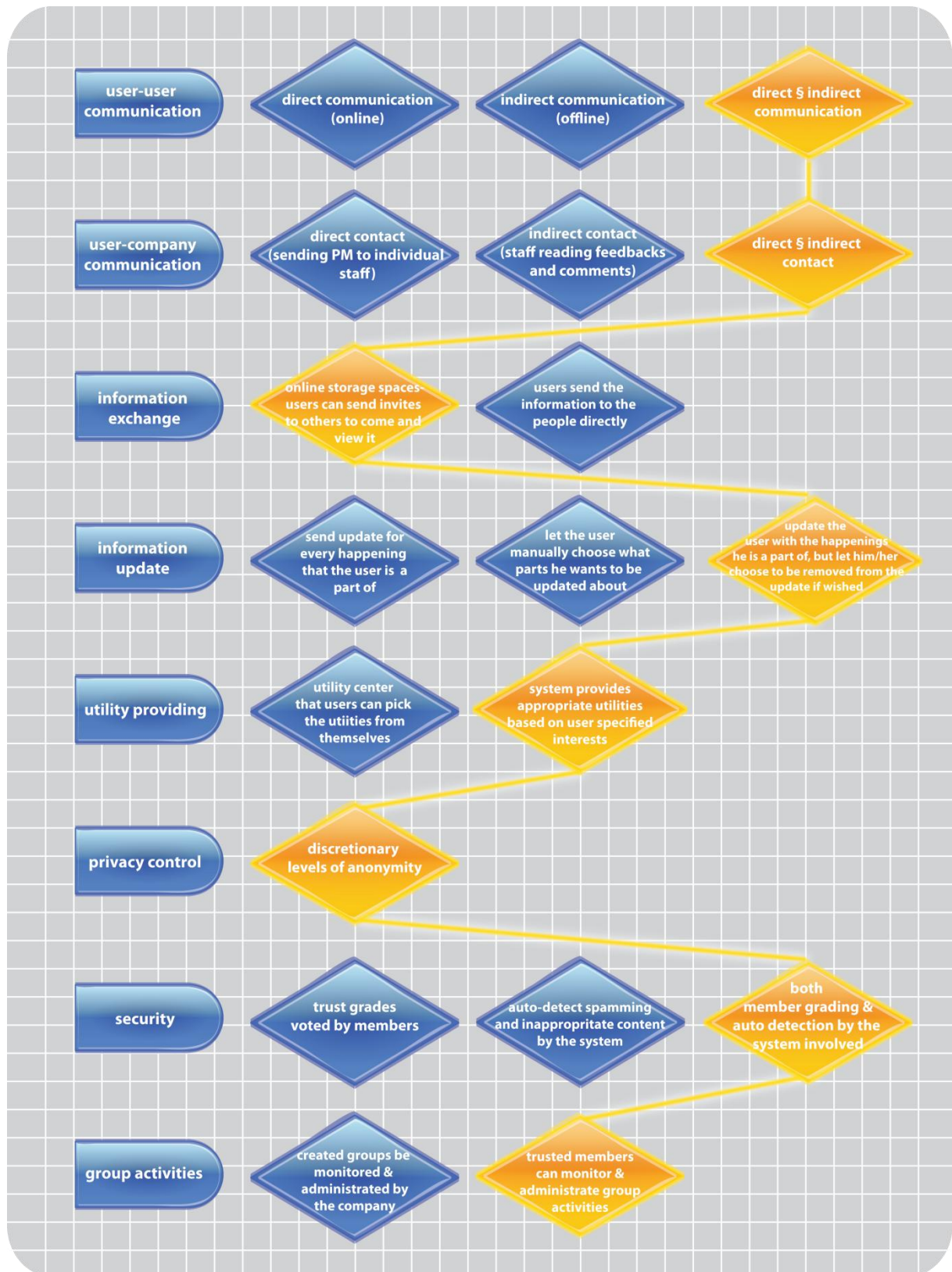


Figure 4.1: Morphological Chart

As it can be seen in the above figure, the best solutions that would match both user and company requirements (requirements gathered through the questionnaire which was sent in the previous stage), have been selected and marked in orange in the graph.

4.4. Classification of Design Information

After sending out the questionnaire to students, Beta testers and Lavasoft Stake Holders, and also performing the “literature searching” and “morphological charts” steps, a set of design problems could be created from the outcome of the answers.

The problem sets created include the following:

User Side:

- a. No control over what you want to have as an information resource in your profile (own sake) and how you like others to see it (other's sake)
- b. Difficult to follow up on the information you are interested in getting updates about
- c. Lost motivation to help other members in the community after a while
- d. Boring Design for current social networks
- e. No middle level privacy protection > Users need to be either totally isolated or open
- f. Not easy to trust the members who are trying to make contact with you if you do not know them from before
- g. Entering new information has the risk of the old to get lost or forgotten in Social Communities
- h. It takes a long time for new members to get recognized within the community and gain other's trust
- i. User activities do not receive the appreciation expected
- j. No good way offered by social communities to share knowledge and learn from others
- k. It takes a very long time for one to receive an answer for his posted question in many cases
- l. It's hard to find the right people for your specific purpose
- m. Information gets hidden in long strings of text and nested menus
- n. Not having the tools you need to work with right at hand
- o. Every person is good for doing a specific task, not everyone should do everything
- p. No easy way to get real-time statistics about what's happening within the community
- q. Low level of activity as a result of lack of motivation

Company side:

- i. The company should look elsewhere and in several external resources to find out user reviews and opinions about their products
- ii. Information gets hidden in long strings of text and nested menus
- iii. It's hard for the company to send out the information to the appropriate group of users
- iv. Difficult to follow up on the information the company is interested in getting updates about
- v. Lost motivation for users who help out the company in various ways
- vi. There is currently no easy way to get statistics from various aspects of the user-side activities: e.g. which parts of the website users are most interested in, number of visits to a specific product page which are easy to understand as well
- vii. The companies' products and it's online presence (the website) are not inter-connected
- viii. There is no center to educate people regarding the company's interested topics (security, privacy and etc.)
- ix. Currently there is no way to send out special offers to the people who contribute to the company
- x. Not an easy way to communicate with the company's target groups
- xi. Users do not have the right tools to contribute to the company (e.g. a tool they could modify the skins for the Lavasoft products online and submit them)

- xii. User creativity is not shared with the company for improving the company's products and performance in general
- xiii. Decrease in the overall member activities within the community after a while

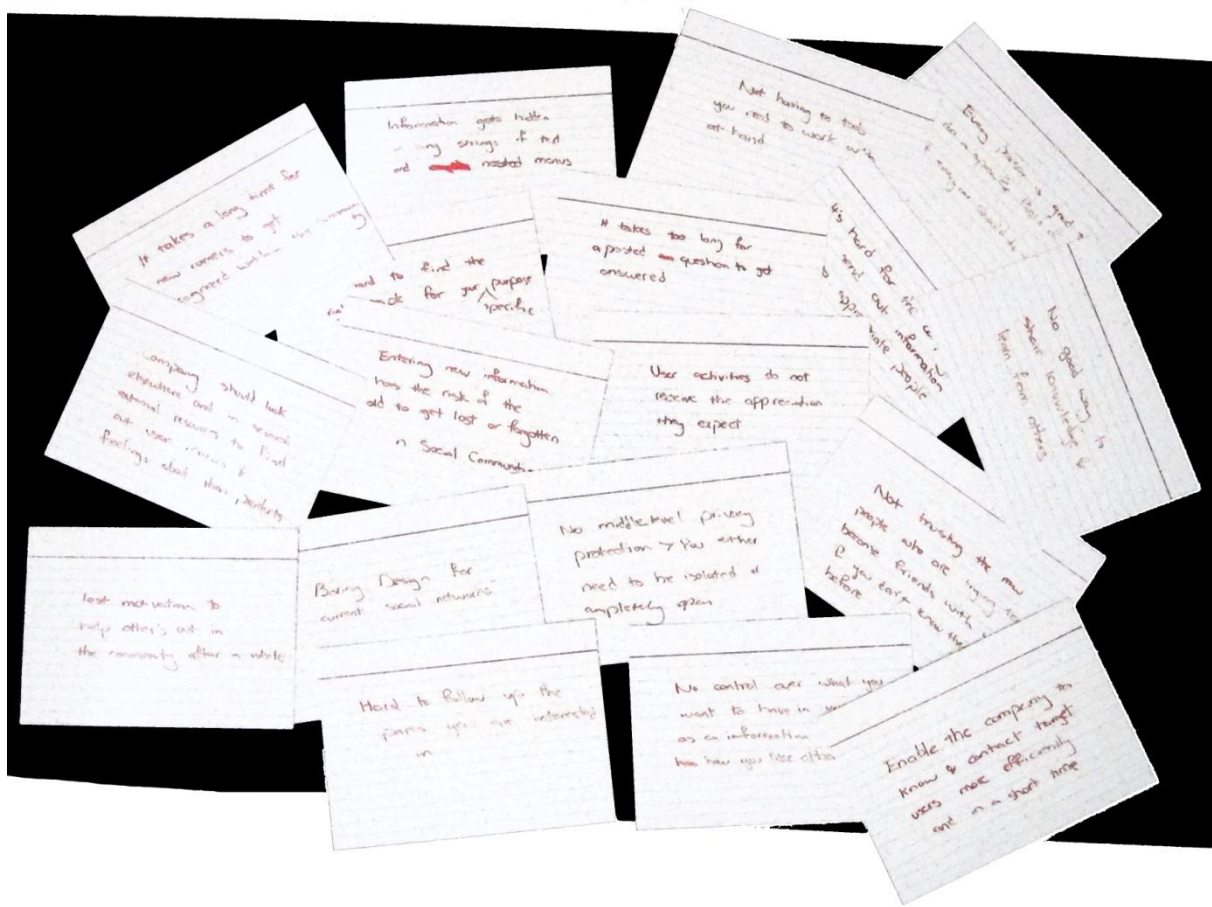


Figure 4.2: Cards containing the problems

After finding out the problems at hand, the next step in this method was to group them into categories that would fit both the recorded data and my own view of the problem. Figure 4.3 demonstrates this categorization after long sessions of moving the cards (Figure 4.2) back and forth in-between the categories to find the best group for them. The categories were then indexed for easy referencing. This diagram has been put into **Appendix E** as well for easy referencing throughout the rest of this report.

This method was of great value in my work since it helped me to clarify the problem at hand at an early stage, thus reducing the risk of starting off in a wrong track or neglecting large sectors of the problem (Jones, 1992). The classification of the problem was also useful in identifying the points of conflicts or inconsistencies within the design situation. Indexing the categories was a great time saver and a beneficial way to reference design solutions (in the Action chapter) to the problems they were aiming to resolve.

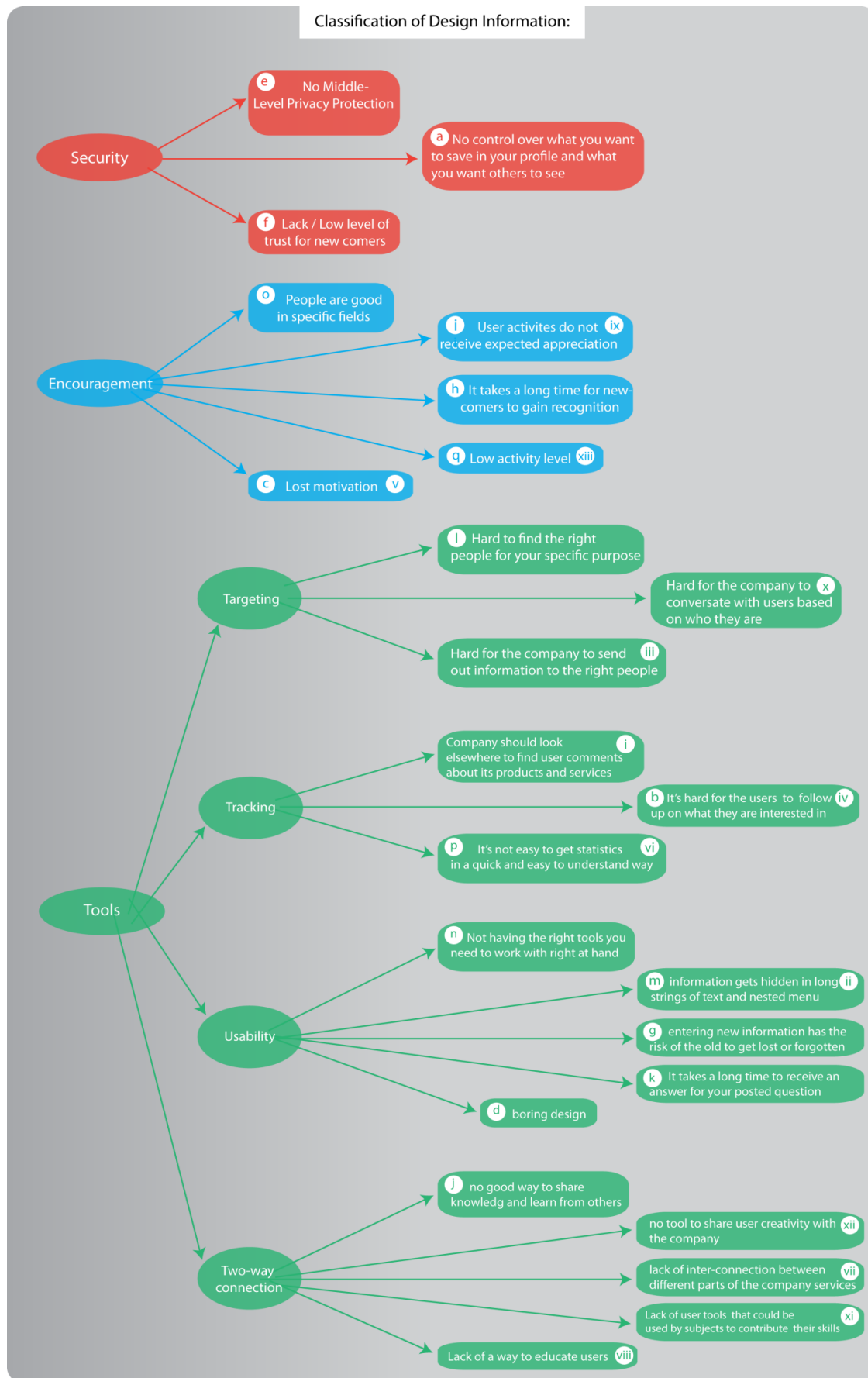


Figure 4.3: Classification of design information

4.5. Strategy Switching

As I selected the main strategy to work with in this project (designing the outline of a social community that is created based on user roles [section 5.5] and also including some detailed design for applications like Friender [section 5.7] and Asker [section 5.8] that have direct relation with the problems being solved during this work), I kept a separate record of the thoughts that were being emerged alongside following this main path. I decided to call this record of thoughts as “idea book” (Appendix D)

These thoughts were looked into after the main strategy was worked on and the ones that matched the actual path of the main strategy were simply added on to the workflow. For the ideas that I had no strategy planned, I allocated a separate time to include them in my workflow (e.g. the information visualization section in Appendix D was something I did not plan to have in the beginning and added it to the main strategy later on)

A more detailed description of where the strategy switching actually happened (I changed the strategy in my work from what I originally planned it) will be brought into attention in section 5 of this report (‘action’ section). Examples include: section 5.11 profile look and feel.

5. Action

This part starts with a pre-study that was required to be performed to proceed with this work. The actual design work and what led to specific design decisions and mockups that would explain the design concept in detail are other parts of this chapter.

This section provides you with the design decisions that were either prototyped in detail (I designed my suggested solution through static interface mockups) or remained as concept for future work (I explained the design suggestion, but did not create a mockup for it). The major presented prototypes in this project work include: Role based profile designs, Information Visualization, the rewarding system, the Friender and the Asker gadgets. The major partly implemented designs are: The Incremental profile, 3D profile design and Community Terms.

If a design is partly implemented or remains as a design concept only (no mockup is used to communicate the design with the user), it will be mentioned in the relevant section.

The action phase happened based on the findings from the previous steps (especially through the results of the ‘questionnaires’, the findings through the ‘literature searches’, the problem domains identified from the ‘classification of design information’ procedure and the ‘morphological chart’). Since it was identified that MyLavasoftware stands in the growth stage of the community life cycle (see section 3.2. Online community Life Cycle for a list of community life cycles), all the design decisions and implementations hence were focused on helping the community to pass the growth stage and reach and stay in the maturity phase in which the community strength takes shape and trust and lasting relationships between subjects are built. As a result, this phase contained a checklist of what the system needed to have in order to meet the requirements for it to carry on iterating in its maturity stage.

As a starting point, I reviewed the problems classified in Appendix E: Problem & Solution

Diagram to get a feeling of what to aim for in my design. I did not proceed with implementing a single design solution for each individual problem since this would make the finished system to be a clutter of individual parts loosely glued together and result in a contradiction to a goal-oriented design approach as described by Alan Cooper (2007). Instead what I did was to make big design decisions based on the main category of classified problems (security, encouragement and the tools). The action points for these main decisions were to identify the following:

- The strategies due for community monitoring (for the security category)
- Installation of a reward and reputation mechanism and other user motivation factors (for the engagement category)
- The user activities that are critical for the community (for the tools category)

The above information was either fully or partially collected through the user and company answers to the questionnaire (requirement-gathering phase). More literature reviews and research in the field was performed to enhance these findings and collect enough input to start the system design. After the initial design, I kept referencing my work to the problem domains and getting more ideas of improvements from it, as I was moving along with my design work in iterative patterns.

It should be noted that the system designs that are presented in the coming section are for demonstrating the proposed design solution in that section and exploring the design situation. Hence, it should not be expected from the prototype to contain the ultimate layout that would match the current design of MyLavasoftware.

5.1. Study of existing social networks

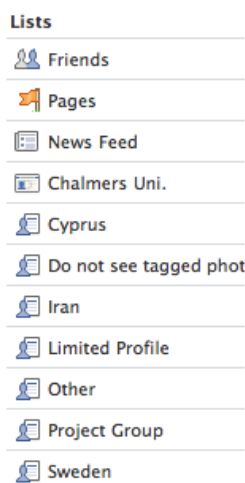
In this section, a more detailed study of the current social networks, Facebook and LinkedIn is being presented and is used as a source for following the good and avoiding the bad.

5.1.1. What works in current social networks

After studying the above-mentioned systems and comparing their features and applications, I came to the realization that although the nature of the two communities is almost the same (online social communities that is used by members to interact with each other), but the features and functionalities of them are quite different. So it should be interesting to study and compare the various ways these communities try to solve a problem and using it as an input for the design of MyLavasoftware.

5.1.1.1. Facebook

The world of Facebook is vastly expanded and is not easy to be analysed as a whole in a side-study like this. But I am trying to focus on the main features of this community that seems interesting and can act as a beneficial input for my current project work.



Facebook has a wide variety of settings and control tools used for various parts of its functionalities. One of the great features that Facebook is currently facilitated with (at the time of writing this report) is the “Friend Lists” feature (Figure 5.1). Here is Facebook’s own description of this feature (Facebook Help Center, www):

“This tool provides organized groupings of your friends on Facebook. For example, you can create a Friend List for your friends that meet for weekly book club meetings. You can filter your view of each list’s stream of activity separately on the home page. Friend Lists are easy to manage and allow you to send messages and invites to these groups of people all at once.”

One thing that is not mentioned in this description is the ability to set individual access permissions for each of these lists for parts of your profile like photo albums and contact information. This privacy management (although not perfectly designed in my opinion) might be one of the reasons why millions of

Figure 5.1

users to trust this online community and use it as a tool to share the details of their life with their trusted buddies while still being able to keep professional contact with their coworkers and schoolmates (Figure 5.2).

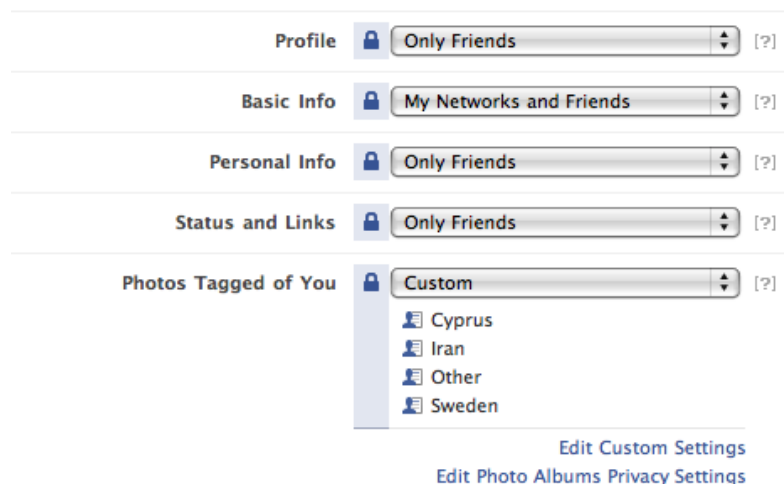


Figure 5.2

The “notification” system is another beneficial feature that is implemented in Facebook and is to be used as a quick activity checker. This time-saving system is designed to notify the subject about the new actions that people in the community have taken that directly relate to him; e.g. writings on his wall, comments on his photo and so on (Figure 5.3).

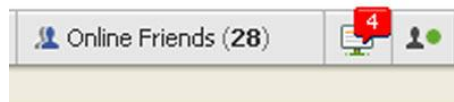


Figure 5.3

And last, but not least, the “News Feed” section of Facebook is a strong network activity monitoring facility that enables the users to get a quick update about the latest happenings within their network and groups (Figure 5.4).



Figure 5.4

5.1.1.2. LinkedIn

LinkedIn is created based on the idea of keeping things simple and providing as few options as possible to make the system less complicated. In my opinion, it is possible that this design solution is the side-effect of the fact that the creators had the purpose of having LinkedIn as a substitute for Curriculum Vitae: As updated Curriculum Vitae, the clean LinkedIn profile, accessible on the web via search queries, is an easily constructed, inexpensive professional web page (Skeels, Grudin, 2009).

One of the major points of interest in LinkedIn for me was a component called: “Answers”. This is actually an “ask for advice” system that has been implemented with the aim of enabling the network members to get professional advice and answers to their questions. This will result in a reduced wait time

for getting answers for your problems online and a more trust-based learning from others' experiences (Figure 5.5).

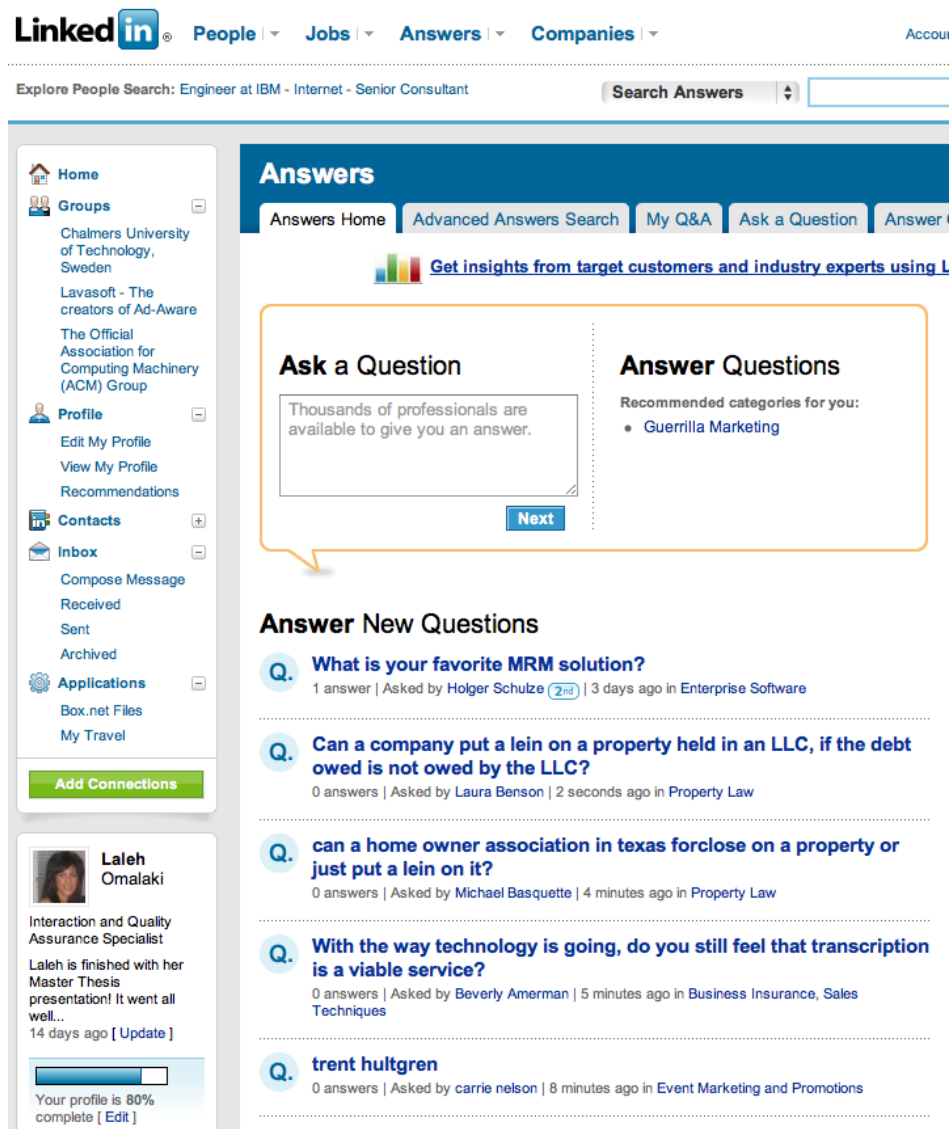


Figure 5.5

Another useful feature that came to my attention in LinkedIn was the applications that were built to work in this environment (Figure 5.6). The important facility that some of these applications provided was an online storage place to upload documents and share them with others. Applications like “SlideShare Presentation”, “Box.net Files” and “Huddle Work Spaces” are the tools currently available (at the time of writing this report) with online storage spaces being offered to the users in order to reduce the need for them in using external applications and physical spaces for working on and storing their documents.



Figure 5.6

5.1.1.3. Common in both

In these communities, the privacy control options like “Hide My Connections list” in LinkedIn (Figure 5.7) and “Who can see this” in Facebook (Figure 5.8) are present and in my opinion these are the most important features that need to be included or considered for all social communities.

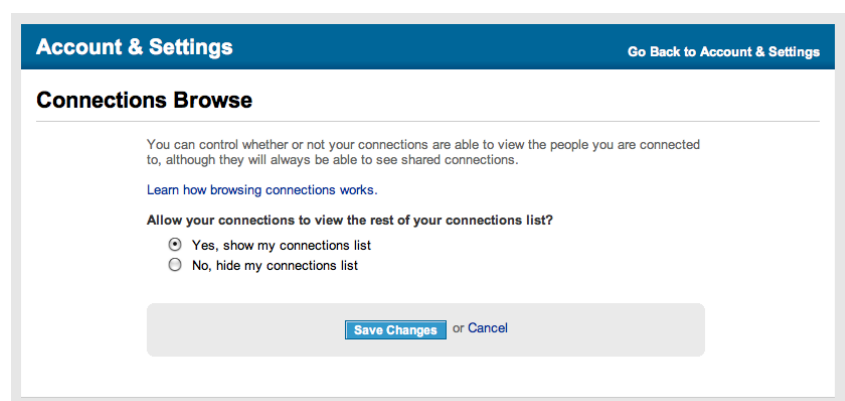


Figure 5.7

Privacy ► Photos

Control who sees each of your photo albums.



Figure 5.8

Although, the level of customizability is not considered in detail in LinkedIn, or all the customizability options are not put together in one place in Facebook which could make the system hard to use, but these options support a very important aspect of online communities: enabling the users to have control over their account and privacy.

5.1.2. What does not work in current social networks

It is a reality that a system can never be perfect. What is important is to learn from the mistakes of others and avoid doing the same mistake in the future system designs. In this section, I am trying to present a few design mistakes that I have figured out through my own use of the introduced two well-known social networks in section 2.2.1 and 2.2.2.

5.1.2.1. Facebook

- **Privacy Management for Friend Lists in Facebook:** Although the “Friend Lists” have been introduced as one of the features that is designed in a good way in an earlier section in this chapter, but from my findings, there are some flaws in the system’s architecture. What I believe “Friend Lists” has failed to provide the users with is a direct manipulation of privacy settings for each list. What a user needs to do is to go to the actual application he wants the privacy settings to be assigned to and then change the settings for a list in there.
At the time of writing this report, it is not possible in Facebook to check what settings have been assigned to a specific list and the user should try to remember the privacy settings for each list by heart or through the long process of going to each part of his profile and checking which lists are set to as allowed for that specific part.
- **Information Cluttering in the News Feed of Facebook:** Another possible design problem that has been observed in Facebook is in its News Feed feature (Figure 5.4). This feature provides the user with a list of happenings within their network of friends and their latest posts or activities within the community. If a user has a big network of friends, the amount of information presented in this section can become massive and lead to possible visual clutters. Although the users are able to hide the notifications for the friends/applications they do not want, this still does not help as much as it should for making the navigation and gaining an insight of all the happenings easier.

5.1.2.2. LinkedIn

The weak points I identified in the design and structure of LinkedIn are:

- Search Results in the LinkedIn network: The system LinkedIn is using for presenting the search results for people is a text based list that could be sorted according to criteria like: Relevance, Relationship degree, Keywords or a combination of them (Figure 5.9). The lack of customizability for viewing the results beyond these predefined criteria and the inexistence of a visualization technique to make it easier to explore in the search results is what has come to my attention.

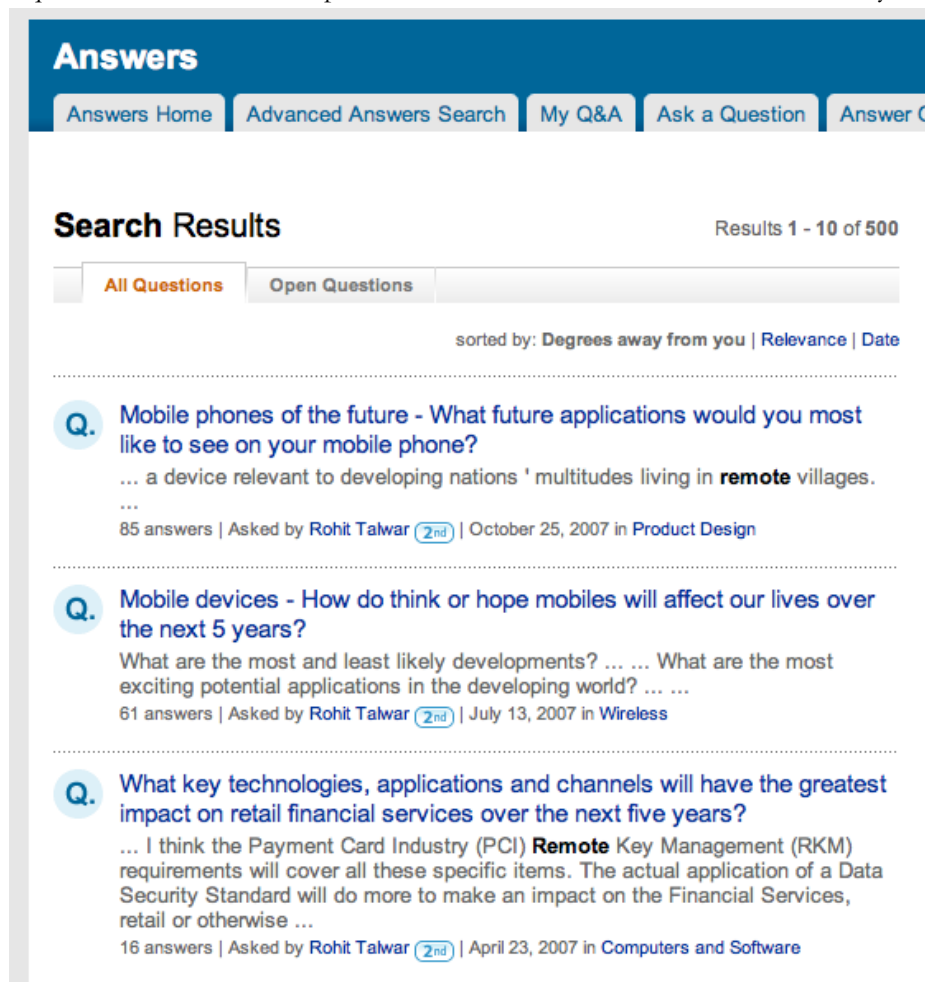


Figure 5.9

- LinkedIn makes it hard for newcomers to gain popularity: One other fact the LinkedIn people search system is based on is the degree of visibility, which is directly dependent on the user's network size. The logic used here is: the larger a user's friend network is, the higher the chance he appears in search results within the network. The problem this methodology will bring about is its limitation in helping the new comers to get known within the community by the system.
- Privacy management in LinkedIn: As mentioned in an earlier section, LinkedIn does not provide a very customizable privacy management system. Although this has advantages from a usability perspective (less complexity in the system makes it easier to use and manage), the wishes of those who might want to have a more detailed control over various parts of their profile might be ignored. Using an all or none system in most of LinkedIn settings (e.g. you can set your profile photo to be visible either to everyone or only your connections/network as shown in Figure 5.10)

is preferably something to avoid in the design of MyLavasoft, which has the goal of “putting the power in people’s hands” (Lavasoft News, [www](#)).

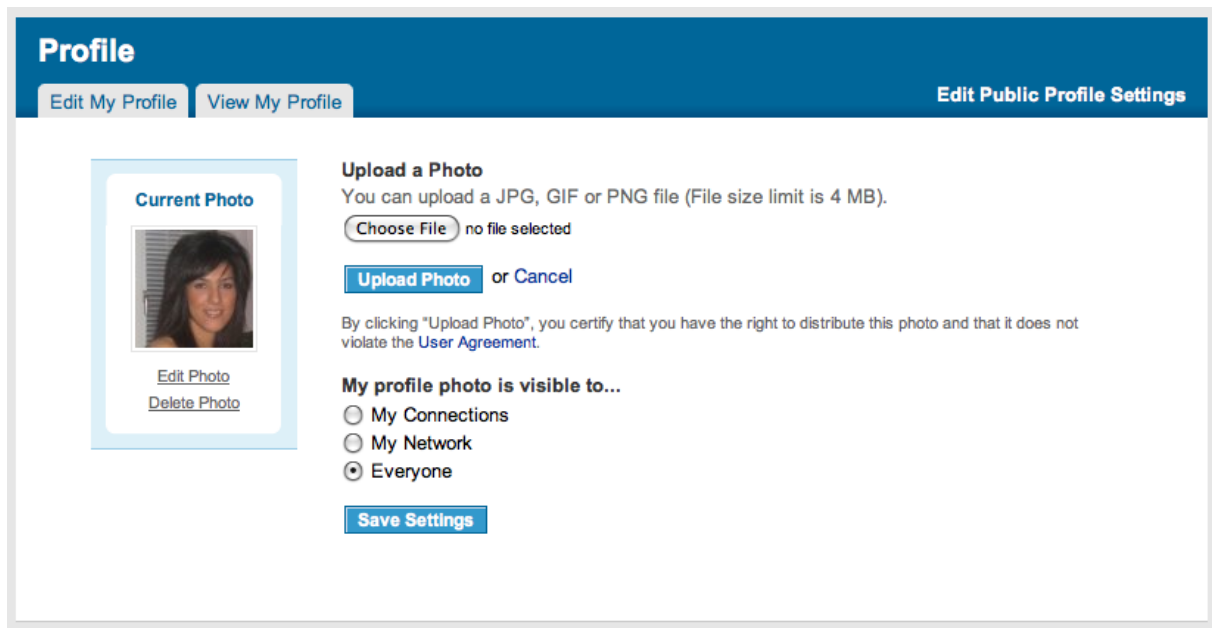


Figure 5.10

5.1.2.3. Why is it not a good idea for business organizations to use existing social networks

As a conclusion from the study of these two online communities, Facebook and LinkedIn, it has become obvious that a well structured and easy-to-use privacy management system is what is lacking in both communities. Since business organizations usually deal with their customers through online communication channels and their customers’ privacy is of great importance to them, using the current social networks for business organizations cannot be a good approach.

Another reason to support the idea of not using the available networks for business use is the fact that although these communities are made customizable to some extent through making an open-source third party application implementation available for everyone, the main structure of the systems that usually involves the important communication parts (e.g. posting messages, creating groups, finding friends, searching for people and so on) are not customizable. So in case an organization decides to utilize such communities, it should follow the rules of that community and its system structure and limit its activities based on what the community is providing it with. A big side-effect of this lack of customizability is that the organization will not be able to gain any beneficial statistical overview of the members’ opinions, needs and complaints about the company services that would be aimed at the company itself.

As a result of all the above, it would be a great asset for any business organization that would like to have a better communication with its users, to provide their own special platform of communication instead of being a part of the existing communities, which could act as a short-term solution only.

5.1.3. Pre-Study in Information Visualization

One new and vast area in Human Computer Interaction and specifically in Information Architecture is Information Visualization (InfoViz). The purpose of InfoViz is to present data in a visual form in order to facilitate rapid and efficient analyses and perception of the accumulated data. Visualization is a path from

data to understanding. The information content of visualization is a combination of the number of elements, the number of attribute values per element, and the range of different attribute values to be visualized (Sawant et al., 2009).

Massive volumes of numerical and textual data make it hard to find the valuable information one is looking for. Not having the possibility to adequately explore the large amounts of data, which have been collected because of their usefulness, makes the data become useless instead and the databases become data ‘dumps’ (Keim, 2002). The basic idea behind data visualization is to present the data in a visual form that allows the human to get insight into the data, draw quick and adequate conclusions and directly interact with the data.

In a book written by Ben Shneiderman (1996), a three-step process has been described for visual data exploration: overview first, zoom and filter, and then detail-on-demand. This process is being referred to as “Information Seeking Mantra” and can be described in detail as: first, the user gets an overview of the data in which he identifies interesting patterns and focuses on one or more of the patterns. For analyzing the pattern, the user needs to drill-down and get access to the data details.

Data types to be visualized can be categorized based on the number of variables/attributes being presented in that particular data visualization (Keim, 2002):

- *One-dimensional data*: has one dense dimension like time series of stock prices
- *Two-dimensional data*: has two distinct dimensions like geographical data
- *Multi-dimensional data*: consists of more than three attributes and cannot be presented using a simple 2D or 3D plot
- *Text & Hypertext*: data that cannot be easily described by numbers. They require transformation of data into description vectors. Example includes word counting
- *Hierarchies & Graphs*: Data records that have relationships in them. Graphs are used to represent such interdependencies
- *Algorithms & Software*: Is used to represent codes of programming in a structured way through algorithms for error debugging purposes

The current available visualization techniques are categorized into (Keim, 2002):

- *Geometrically-Transformed Displays*: aim at finding the ‘interesting’ transformations of multi-dimensional data sets
- *Iconic Displays*: map the attributes of a multi-dimensional data item to the features of an icon
- *Dense Pixel Displays*: map each value to a colored pixel group of the corresponding pixels in adjacent areas
- *Stacked Displays*: embed coordinates systems into another coordinate system and present data in a hierarchy

And finally, the categories of interaction techniques for a visualization work are:

- *Dynamic Projections*: dynamically change the projections in a multi-dimensional dataset.
- *Interactive filtering*: partitioning the dataset into segments so interesting subsets could be easily focused on. This can be achieved by either directly selecting the desired subset (browsing) or by specifying the properties of the desired subset (querying)
- *Interactive zooming*: providing the overview of the data in a highly compressed form and at the same time allowing a variable display of the data on different resolutions for a more detailed presentation

- *Interactive Distortion*: showing a selected portion of the data in high detail while other parts are shown with a lower level of detail

Based on the field of use, a combination of the above categorized information visualization types, techniques and interactions can be used to achieve the optimum level of presentation and protect the user of any system from getting buried in an information avalanche.

Whatever technique of visualization is used for a given dataset(s), it should enable the user to get information instantly, make sense out of it and reach valuable decisions in a relatively short time (Gershon, Eick, Card, 1998).

5.2. User Roles

(Solves problems o, l, x, iii & n)

One of the major problem domains that was identified through the requirement-gathering phase of this project was the shortcoming in the current community designs that would enable users to take advantage of their abilities and creative side while using such communities even for professional purposes.

Performing studies of related works and of what is currently available as an online social community facility, at the same time as analyzing how users are performing in real – life social communities, brought me to the point of believing that what would be the central element in user perspective in this context is being valued for what you are capable of. But how can the designer of a system (the social network in this context) decide what a user is capable of? A possibility could be to provide a test for the member who wants to join the community that would measure different abilities of him based on the answers to the test questions. But a major side effect this method could have is offending the user and also killing the motivation in them to join the site by overloading them with various questions. As a result, an alternative and more appealing solution would be to let the user decide for himself what he is capable of and let him make this choice easily and without trouble. This point is when the base of my work started to take shape:

Providing the user with the opportunity to introduce himself as being capable of something and then facilitating him accordingly to assist him in enhancing this capability

The way to proceed with this notion is letting the user select a role within the community while joining it that would define the path of activities he will be performing in the social community throughout his participation. After that, the user should be provided with the tools that are expected to come handy throughout his community life and online presence both for enhancing his activities and his direct or indirect contributions to the company.

Providing the user with the opportunity to select a role and base his activities on this role has benefits for both the company and the user:

- The company will know whom they are dealing with and hence will find its way in a more manageable manner through the vast number of users. It makes focusing on user groups easier and hence stops spamming all the community members with messages that need to be aimed at specific groups only.
- The user on the other hand will have the opportunity to have the facilities he needs based on his field of interest (which is defined by his role). Holding the label (the selected role) the user has decided to have will also help in self-orientation while performing activities in the community.

Letting users select the role/roles they want to have within the community has the benefit of helping them to orient themselves and their activities. It is like when you are a student in real life and hence know that

you have specific responsibilities in that role: to study and add to your knowledge day by day. An online community can be designed based on the same concept. If you are allowed to select the role(s) that satisfy you and then be facilitated according to your role of choice, you will be encouraged to perform better in the selected role and feel more responsible within the community and for your activities.

The concept of roles has been used in online forums from long ago. Users in the forums are given roles based on the type of activities they perform and their connection to the forum. These roles are usually set by the forum administrator and define the responsibilities of the user within the forum.

A major benefit of introducing user roles in the community for the company is “the division of labor”. If users have specific roles, they are prepared to contribute in that role, hence making it easier for the company to target them for assigning specific tasks or challenging them into activities that promote a certain behavior.

I am proposing a set of predefined roles that I believe should be used for MyLavasoftware. The suggested roles are based on the requirements gathered from different surveys sent to Lavasoftware Managers, Lavasoftware Customers and Chalmers students.

The proposed roles are as follows:

Role Title	Role Description
Beta Tester	Members who would want to perform voluntary tests on company products during software beta periods
Coder / Programmer	People interested in programming - the possibility to code for add-ons for various company products
Security Advisor	Helping other users in recovering their infected computers
User Experience	Interested in software usability aspects and HCI
Team leader	For ambitious users and the ones who want to lead activities within groups
Designer	For designers who are looking for a place to share their art works and get inspiration from others
Questioner (LS Products)	People who need help in using Lavasoftware products
Questioner (General)	People who need to receive help in general computer matters
Malware Researcher	Volunteers wanting to take active part in reporting new threats to the company
Answerer	Volunteers wanting to help out questioners and answering the un-answered within the community
Gamer	Interested in games
Student	For students who want to learn, share information and meet other students
Here for fun	For those who want to use the community to have fun and make new friends
Artist	Musicians, multimedia creators and digital film makers can choose this role
Psychologist	These are groups of people who take the psychology of life and human in detailed consideration and can be beneficial for those who need help in their designs for specific groups of target users
Teacher	For teachers who are here to help students and to be there when they are needed as information resources within the subject of their specialty

Table 5.1: Community Roles

Based on the importance of role selection in member self-orientation and activity enhancement, the idea of designing role-based profiles took shape: the user's profile will be designed depending on the role he has selected in the first place. To make sure that having a specific role does not put a barrier on what a user is able to do within the community, my design suggestion will be in a way that provides the same facilities for all types of users, but what is available right at hand will be varying depending on the selected role(s).

The above proposal will need special questionnaires to be sent out to all the above roles within the target

group separately, asking them directly or indirectly to list the required tools they might need in their profile and rating them according to their importance.

Designing for all the introduced roles is a very time consuming process and cannot be done for a project with this time limit. But two sample user groups have been selected and requirements for these groups have been gathered through both field studies and short surveys. The results have been put into a design and illustrated through static mockups in the upcoming sections (section 5.5). The success and failures of the proposed design will need to be user tested and this would be a part of the future work in this scope and will not be covered in this project.

5.3. Activity Monitoring

(Solves problem $c(v)$ & $q(xiii)$)

Since a user might feel like he would be capable of having multiple roles or if he is in the need of having an auxiliary role (like questioner to get help from others), I decided to propose multiple role selection ability for members in the design of MyLavasoftware. Based on my proposal, users will be given the opportunity to choose up to three roles when they are joining the community (choosing one role is compulsory when joining MyLavasoftware. Users can choose the additional roles later on).

The criteria behind allowing a maximum of three roles only per user is on the hypothesis that user performance will be decreased if he is allowed to have more roles than that. Choosing a role brings special responsibilities for the members: if they choose to be a Beta Tester, they have to perform activities like reporting bugs and etc. when the company's software is in its beta period. As a result, this limitation in number of possible selected roles will ensure maximum user performance within the limited roles he has selected to act upon within the community.

If the users are not active enough within the primary role they have selected, they will lose that role and gain the "Here for fun" role instead. This decision is to make sure users are active enough within the community and is used as a reminder to users who have been inactive for a long period of time and encouraging them to perform more user actions based on their roles to bring life to the community.

A battery icon will be used to show the life of a user within a role in the user's profile page. For further details please see section 5.5. Profile Design

5.4. Points & the Rewarding System

(Solves problems $i(ix)$, $c(v)$, iii , $q(xiii)$, k & vii)

In order to make it possible for the members of the community to have a visual clue of their social products, it is common to use a pointing system in online communities. These systems provide a counter to be used as a positive feedback for the activities being performed by the users; activities that have positive effect within the network either for the users themselves or for their online-acquaintances or even for the company. I will refer to these social by-products as SocioTechnical Capital (STC) (3.4. The SocioTechnical Capital).

The points being allocated to the members can cover a wide range of activities: reporting bugs, answering other member's questions, providing a feedback to the company on their products and services and so on.

As discussed in an earlier chapter (3.4. The SocioTechnical Capital), the benefits in giving meaning and more focus on social capital within the online network covers areas like:

- **Communication paths:** The communication between users is a social capital since it helps in easing the flow of information, emotional support and behavior monitoring
- **Shared knowledge:** the knowledge being shared is a social capital since it provides means for facts, events and opinions together
- **Shared values:** shared values is a social capital since it provides the community members with means of teaming up and aiming for specific goals and ending up with a finished product
- **Collective identity & Trust:** identity is a social capital since it brings user motivation for acting based on the identity he wants to achieve and get more oriented within the community. Identity in return can turn into trust which is another social capital that enables the community to be a safer place to interact with new people
- **Roles and Norms:** Roles are social capital since they enable both the company and the community members to have specific expectations from the selected person and hence get what they need more quickly and efficiently. On the other hand, the selected person with that specific role will feel the necessity to act and contribute based on his selected role and be more productive

Based on the above categorizations, I have allocated the social capital for MyLavasoftware to various parts of the system structure. We should keep in mind that in the upcoming sections of this report, I am talking about allocating points separately within each proposed application, but the point system for MyLavasoftware is a single counter and values from different applications throughout the community will be added up in the same variable (e.g. the points obtained from the 'Asker' application will be added up to the general points a user has within his profile). The reason for this is to make it easier to identify active members within the community and enabling the company to distribute rewards to its members based on their general achievements and not their activities within a specific application. At the same time, since the application/activity specific points will also be recorded separately, distribution of activity-based rewards will also be a possibility (rewarding those who have answered many customer questions regarding a company product).

I am referring to the SocioTechnical Capital as "Points" in this project; however other terms could also be used like: Tokens, Coins, stars or etc.

Why am I talking about the points separately within each application?

Since all the user activities do not need the same amount of effort or time to be spent on, the number of allocated points will not be the same for the different activities being performed: e.g. the number of points to answer a question in the 'Asker' application is not going to be the same as the number of points for creating a new wiki article. A more detailed discussion of allocating certain number of points for various activities is being discussed in later chapters within this report. What I am going to talk about in this section is rewarding the users based on the number of points they have gained. This is a general rewarding system and is not application dependent, but is user-dependant.

In real-life situations, people decide themselves how they want to appear in a social context and what they would like to become famous for based on what they do. A good example is students: some students want to be known only as friendly people who have good relationships with others and show that by the number of friends they have, while others might only want high grades and be well-known for their intelligence. There are also students who prefer a combination of the attributes for themselves.

Social communities can also be based on the same principle: by allowing users to choose for themselves what they want to be rewarded with, what reputation they would like to receive and etc. In this way, users

will not be limited to act based on what they are told to, but based on what they really want to. Based on this concept, the proposed rewarding system for MyLavasoftware would work as follows:

The rewarding system would be accessible directly through the user's profile page, as a gadget. In the first run, (s)he will be presented with different lists of available awards and the number of points required for obtaining them. The user can choose the label (s)he would like to aim at obtaining and based on the number of points he currently has (if any) and the number of points remained to gain that specific label, a status bar would be presented in his profile page (a status showing what is left to be done to gain that specific number of points).

To help and motivate the user to gain the desired label more quickly, the system can provide the user with suggestions of activities that he could take part in to gain a certain number of points (Figure 5.11)

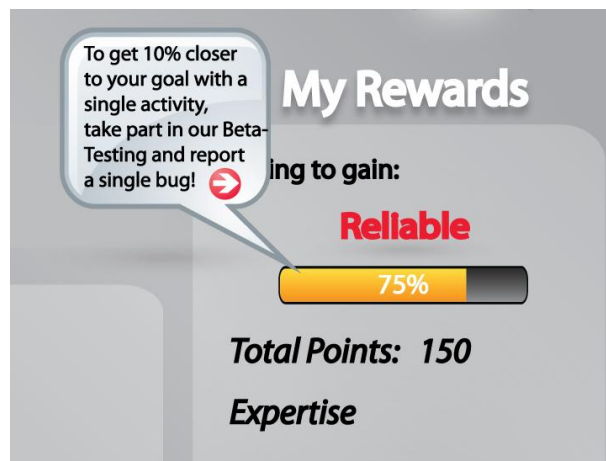


Figure 5.11: Suggesting activities to the user

This will not only be helpful for the user to reach his goal easier, but also for the company as a tool to encourage more user activities within the community. Even more to that, this could be used by the company as a tool to promote certain behaviors and user activities: If the company is in need of a certain activity type in a specific period of time, (e.g. more Bug reports in Software Beta periods), the pointing system can be change to allocate higher points for bug reports than is usually allocated, and also increase the number of users taking part in the bug reporting activity by suggesting them to take part in software testing and reporting issues through the suggestion box (Figure 5.11).

When the user has gained the required number of points and been rewarded with his chosen label, his award will appear as a label next to his name within the community (there needs to be an option in the settings to turn this label on/off as users might not want this label to appear next to their name in some instances of time). A proposal for labels to be offered for users to choose from is shown in table 5.2 (this table has been updated after reading the answers from the surveys sent out later on during this project):

200 points	400 points	600 points	800 points and above
Valued member	Bronze member	Silver member	Gold member
Reliable	Energetic	Ambitious	Master
Knowledgeable	Wise	Smart	Genius
Kind	Hyper	Advanced member	Guru
Friendly	Active	Geek	Scientist
Social	Discoverer	Nerd	The King/Queen
Supporter	Contributor	Supplier	Commander

Table 5.2: Proposals for reward labels

The idea with this pointing system is, in the first level up (200 points), users are becoming a little bit known within the community. This level is only enough for them to be known as a member of MyLavasoftware. The next level up would be when they have performed more activities within the community, and hence this is an indication of them being active (400 points). As they perform better and better, they would enter a stage in which they could be relied on as knowledgeable people in their role (600 points). In the final level up, they have gained enough points to be considered as the so-called Gurus in their field (800+ points).

Why did I decide to present users with alternatives for their rewarded label?

Choice of label varies from person to person: some people might like more professional labels while others would go for fun labels like geek or etc. (this was evident in sections 6.3.2. Students Survey Result and 6.3.3. Beta Testers Survey Result). So giving the user the choice for the label he is to carry with him within the community, gives the user the power to have control over his reputation within the community.

As the results from these surveys shows clearly, some users are interested in getting benefits from the company like free products and discounts instead of receiving a label (33% of beta testers requested free software/products from the company as a reward for their contribution to the company). As a result, at the same time as enabling the subjects to choose labels for themselves as a reward, it would be a nice approach to alternatively offer an additional service to them based on their activities and collected points. A proposed service enhancement for the rewarding system could be as follows:

200 points	400 points	600 points	800 points and above
20% off Company Product 1	50% off Company Product 1	Direct contact with a company member to know him better	Free Company Product 1
20% off Company Product 2	50% off Company Product 2	Ability to publish an article in the company's website	Free Company Product 2
20% off Company Product 3	50% off Company Product 3	Free products from partner companies	Free Company Product 3

Table 5.3: The service enhancements based on the number of points

As it can be seen from the above table, users are again being provided with the choice of what they want to receive in each column (e.g. discount of product 1, 2 or 3). This type of decision based reward offering will give the power to the user and make him feel important and hence would be a critical part of any rewarding system.

5.5. Profile Design

(Solves problems e, a, o, c(v), q(xiii), l, n, m(ii), d, vii & xi)

After deciding on the roles to include in the community and the overall structure of the rewarding system, the next step would be to design the user pages according to these roles. Here is where the strong point of my projects comes into life:

If a user selects a role, he makes himself available to contribute in that role. What the community should bring for him at this stage is a design that helps him perform even better in his selected role instead of putting a barrier on his way. In other words, the interface design of MyLavasoftware should offer an easy way for the user to make his contribution.

The solution would be: customizing the user profile page according to the selected primary role. This could be achieved by following these steps:

- Sending out a questionnaire to the users who have selected a specific user role and asking them what tools they would want to use
- Gathering the data and creating a list of tools based on the priorities mentioned by users
- Designing a profile page for that specific role that would include the most wanted tools/gadgets at hand and has the rest of the gadgets in the profile's periphery, but still reachable

The above design proposal will encourage the user to dynamically participate in the activities he has volunteered to take part in by selecting his role, at the same time as enabling him to feel oriented within the community.

Another advantage that this role-based design provides is helping users to establish their identity easier and faster within the community. An important aspect of a community is the identity that individuals both establish within it and derive from it. The way that an individual presents himself is tied to his affiliations with particular communities, and, furthermore, with the roles he plays in them. In Wikipedia, as an example, it was found that one of the main ways that individuals can establish an identity within the community is through the user-page (Bryant, Forte, Bruckman, 2005).

To illustrate my design proposal for role-based profile structuring, I decided to create profile design samples for two groups of users for MyLavasoftware that were available for sending out a questionnaire to: Students and Beta Testers

The requirement gathering for the above groups was performed at the same time (the questionnaire was sent to the above mentioned groups in parallel) and the design work was done in parallel with the requirement-gathering phase. The gathered data from the tests was used to enhance the design in progress. To see these sample profile designs, refer to section 5.5.2 and 5.5.3

5.5.1. Incremental User Profile

The idea being presented in the following section is a proposal for revealing more tools to the user of the community as he matures in his community life. First I will start with the reason behind this proposal and design decision and then will explain the concept in details.

One of the commonly identified subject behaviors in correspondence with the operation of any application (whether Web Applications or Desktop software) is the change in tool usage over time. Vygotsky was the first to describe "the zone of proximal development (ZPD)". The ZPD is a useful concept for understanding why tool use changes, even if access to tools remain the same (as in Wikipedia)(Vygotsky,1978). One realized factor in a study performed on Wikipedia and the change in tool-usage for Wikipedia members was the users' piecemeal awareness of features within it. Based on the ZPD theory, this behavior can be described as the user's ZPD extending to encompass new potential activities, which leads into the tools that mediate these activities to become meaningful features of the environment. Since Wikipedia's interface is not dynamic and does not change, it hence supports a more robust set of activities for Wikipedians (Expert members in Wikipedia) than for novices (Engeström, 1999). This, in my opinion, is the biggest design failure that not only online communities, but also almost all current computer applications commit and hence is something to avoid in the design of MyLavasoftware.

To overcome this problem, a lifetime perspective can be assigned to each user; counting the amount of activities the subject performs from the time he has joined the community. This counter could be accounted as the level of familiarity of the user with his environment (the more activities a subject performs within the community, the more familiar he becomes with the system and a less novice user he will be).

The user will be presented with a simple interface and toolset in the beginning. As this counter's value increases as the result of more user activities he performs within the community, more parts of the system will be revealed to the user, hence making the learning of the interaction with the system a gradual, but intuitive and effective process. The mentioned life counter value can be made invisible to the user, since he should not feel restricted because of his unfamiliarity with the system by presenting him with this number.

The idea of providing incremental profile behavior to users will remain as a design concept and will not be illustrated through mockups.

5.5.2. Student Page

Although students are not the major predicted target group of MyLavasoftware, their insights are expected to provide valuable input for this project and help in constructing a general design guideline for the whole community. Since learning can be a common goal for everyone who joins an online community and is not limited to students, getting input from experienced learners (students) can help to improve the overall learning experience in an online community.

The information students were expected to provide would be used to understand what tools and widgets are necessary to have in MyLavasoftware so that the community would become a beneficial place to enhance the learning experience of members and making it a different place from what is now currently available as a social community.

To get an insight of the needs of this group of users in an online community, a survey was sent to Chalmers Interaction Design students (Appendix B). Since my proposed design is based on providing the same tool set for every role but with different arrangements based on the requested priority, this survey would also help to get an insight of the tools that could be considered for the community that would enhance learning and problem solving abilities as well as supporting the creative side of the members. Another expected input from this survey was to determine if there were any more roles to be added to the list of available community roles that users could choose from in their profile creation process. And last but not least, the answers were going to help me in designing my rewarding system for MyLavasoftware.

The students were asked 4 questions and they were free to answer them to the extend they wanted. The quantitative data from the student survey results can be found in section 6.3.2. Students Survey Result, but a summary of it is as follows:

What students mainly expected to accomplish by the use of such a system was to find and get into contact with other users who would be beneficial to them (e.g. subjects with special skills or experience in a field). They also expected to be able to have online data storage for themselves in the community in which they could create and share documents of various types. Scheduling tasks and making to-do lists was another expected facility to include. And last but not least, students mentioned the need for a brainstorming platform in which idea creation process with a group of people would be facilitated. Other secondary tools required by students included: note taker, dictionary, search utility, question asking tool, news, talk pages and wiki.

Based on the above results, a first sketch for the student profile page was created (Figure 5.12)

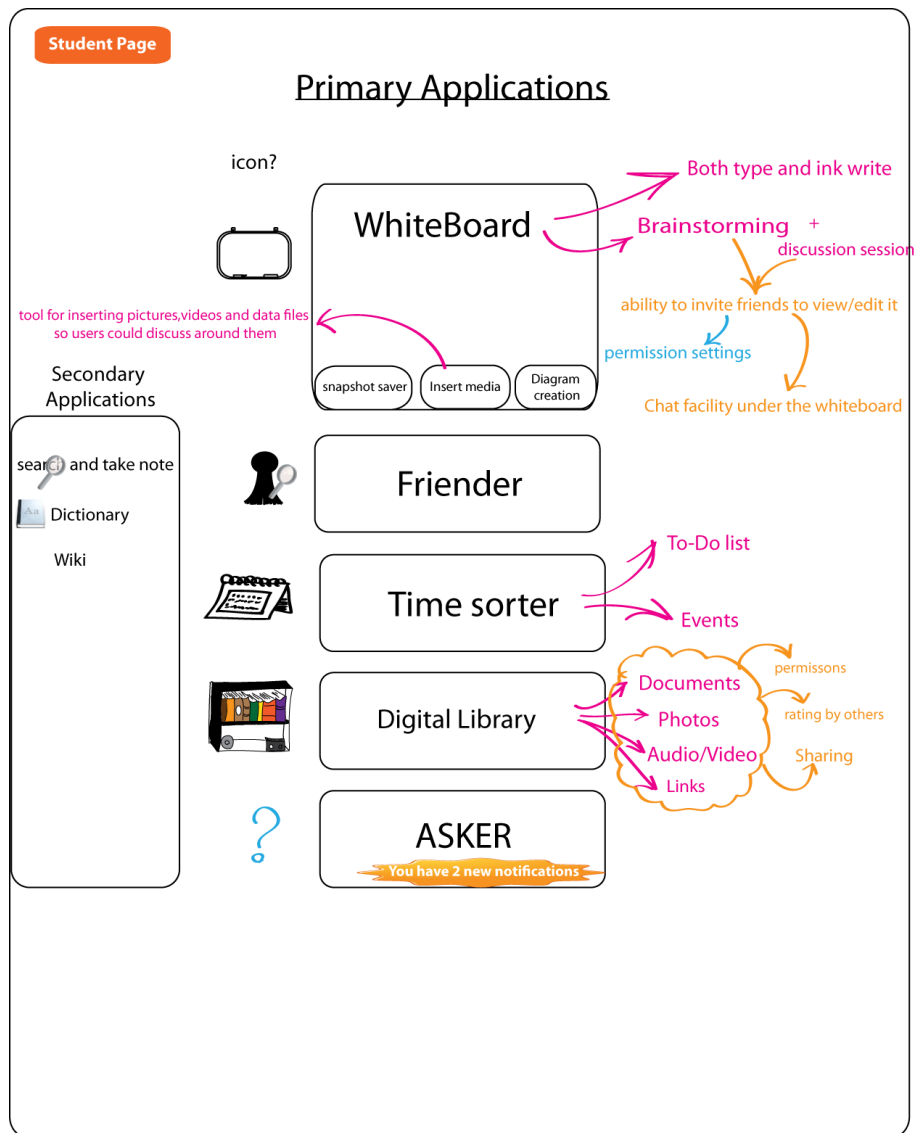


Figure 5.12: Sketch for the student page

After performing more analysis and redesigns of the above sketch (and also after making decisions for the design of the Beta Tester page in section 5.5.3. Beta Testers' page, in order to end up with a common profile platform), a final design proposal for the student page was provided. Another effect the Beta Tester profile design had on the student page design was the addition of some more secondary tools to the student's secondary gadget space. This was to ensure that the same gadgets were available to all user-roles in the community (as is described in section 5.2)

The redesign of the proposed Student Page can be seen in Figure 5.13: Design suggestion for the student page



Figure 5.13: Design suggestion for the student page

From the sketch to the design:

Here, I will bring a brief explanation of how the design changed from the sketch in Figure 5.12 to the final design in Figure 5.13:

As it can be seen by comparing the two figures, the number of main tools in the center of the profile page has been reduced from five (in Figure 5.12) to three (in Figure 5.13). This decision was made to reduce the visual clutter in the center of the user's profile and narrowing down the user's focus on fewer tools to enhance the subject's performance.

The digital library from the first sketch has been replaced by the bag in the second sketch, which is a general storage tool for various contents (see the depiction in the next page for a more detailed description of the bag feature). The ‘Asker’ gadget has been moved to the left placeholder as a secondary gadget; since it was not mentioned as a highly in-demand tool by students (a second user evaluation of a larger group of users might change this result). The secondary tools (the tools in the left side) have then been placed by the order of their priority (number of requests by students for that specific gadget) from high on top to low in the bottom.

It is worth mentioning that the primary gadgets’ order of placements is based on the user’s primary role (student in this case). The “secondary gadgets” will be sorted based on the user’s Secondary (‘Malware Researcher’ in the above example) and Third role (if any) and then his primary role. This decision is to make the gadgets required for the secondary role easily available too.

As mentioned earlier (section 5.3. Activity monitoring), the battery icon in the top right corner is a role life indicator. This is used to represent the activity level of a user within his role. The user can lose his primary role if he does not perform enough activities within his role (shown by an empty battery). This principle is used to encourage users to be active within the community and avoid having users seeking help from members within the community that are not active anymore and hence getting no result for their inquiry from them. This might only apply to certain roles and not be applied to all the roles within the community (e.g. a questioner about LS products should always be able to ask his questions within the same role even if he has not been active for a long time). Deciding which roles to include in this life-based system needs further studies and is not in the scope of this project.

The Search function is a global search system that would search for relevant text within the community.

The bag is a placeholder for the following elements within the community:

- My Purchases: Products the user has purchased from the company
- My Items: Documents created by the user and uploaded to his online space
- Items of Interest: Items that the user finds interesting within the community and wants to save them for future reference (something like favorites). The items included in the bag could be links to articles, people, images and etc. The original items can also be saved (the file itself and not merely a link to it) if the permissions for those items are set by the creator of the file in the community.

The bag can also be used to store the watch-list items (section 5.10.1), questions, answers and a lot more depending on user needs and preferences. The idea of using a bag as a storage place in the community is based on its real-life indication: real bags are places for holding personal belongings in.

In the community, to encourage sharing of information and interests across the network and enabling users to let others know of their taste and opinion, subjects should be able to suggest items to their friends. If the subject’s friend suggests an item to him, he should be informed in his main profile page and have the opportunity to either accept or reject the suggestion. This phase is to support user privacy and security. An accepted suggestion will be added to the user’s bag as “items of interest” possibly with a link to the person who initially suggested it. The user should also be able to report a suggestion as ‘inappropriate’ if he feels the need. A reported item would then be sent to the system administrators for revision and being acted upon.

The Visualization gadget is used to show the information visualization presentations that the user has chosen to see. This gadget should be customizable, allowing the user to choose to include the visualizations he is interested in (section 5.6).

5.5.3. Beta Testers' page

The beta testers' page was designed after gathering the survey replies that had been sent out to the beta testers earlier. This survey included questions that both covered the 2D / 3D theme selection (section 5.11) and general requirements gathering for the needed tools and awards that Beta Testers would expect to have. The results from the second part of the survey that were related to the profile page design are summarized here:

The top 3 gadgets that Beta Testers seemed to be mainly interested in having include the following:

- A tool to be able to report bugs and ideas with **(Submitter)**
- Some forum like place to be able to talk with other users in a common place **(Open Talk)**
- A tool to find new friends and communicate with them **(Friender)**

To see a list of all the requested gadgets by Beta Testers, please go to section 6.3.3. Among the other mentioned gadgets by Beta Testers, there were requests for tools like calculator, dictionary and a music player. It might not sound appropriate in the first place to add such tools to the community, but if we count the benefits these additions might have for the community, this conclusion might change:

If users need a tool and the community would not provide them with it, they have to look elsewhere for it. This might distract them from their original task and they discontinue what they were doing within the community (e.g. bug submission). This will result in the inefficiency of users whose work are considered valuable for the company and also decrease the amount of activity in MyLavasoft as a result of user distraction. Based on this hypothesis, all the requested tools have been added to the profile design for Beta Testers. Of course, adding tools that might be outside the core intended functions and features of the site have drawbacks also. For those who might not need these tools, their existence might bring confusion as of what the real purpose of the community is. It also adds a lot of extra development time for features that might not be used by most of the members. As a result, this consideration needs further investigation and user testing to come up with the best solution for their inclusion in the site (e.g. using third party tools that would not cost any development time for the company and also enabling the user to select what tools he would want to be present in his profile).

It should be noted that since the bases of this community is on providing the same tools for all by default (unless there are specific tools that the company does not want others to have access to like the submitter which should only be available for Beta Testers or the user chooses himself not to have a specific tool in his profile), the same tools should be added to the student's profile page (hence the student page design in the previous section has been updated with the new tools).

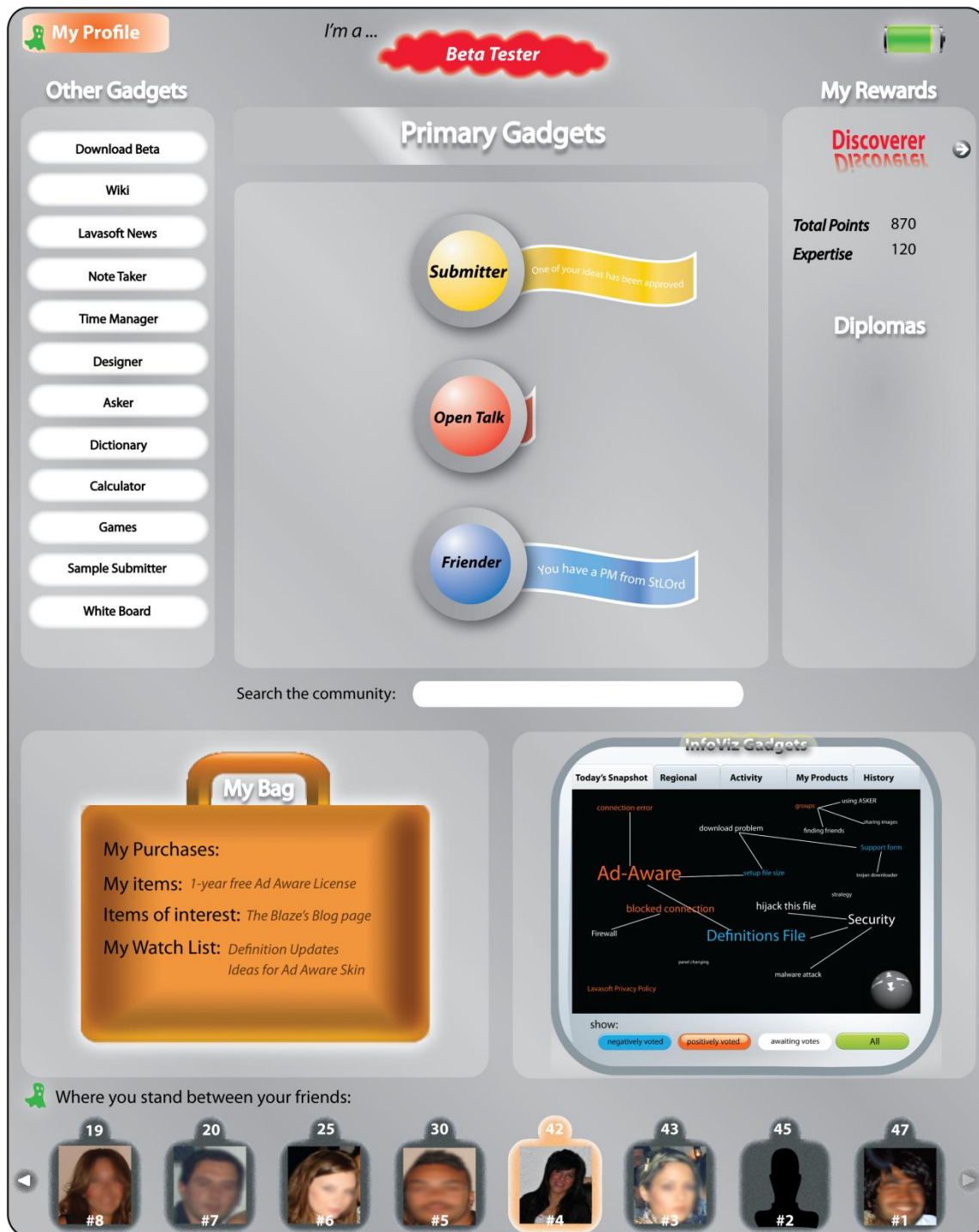


Figure 5.14: Beta tester page

Since the general design of the user profile was already implemented in the previous section, the Beta Tester profile page did not need any sketching and the design work was done directly from the inputs of the questionnaire (see section 6.3.3 for the results obtained from the beta tester survey).

As mentioned earlier, the questionnaire sent to beta testers was not only aimed at providing an overview of the tools to include in the users' profile and their priority of use, but also on what other roles beta testers would benefit from interacting with and also the form of reward they would like to receive for their contribution to the company. The answers for the question regarding the roles within the community that the Beta Testers would benefit from reflected that the most popular role that they would like to get into

contact with would be programmers. This role was already included in the list of roles that MyLavasoftware could offer (table 5.1) and now the benefit of having it within the community becomes obvious: Beta Testers will have their favorite group of users within the community to converse with.

For a complete list of the roles that Beta Testers mentioned would be beneficial to them, see section 6.3.3. Beta Testers Survey Result

And finally, what the Beta Testers wanted to be rewarded with was first and foremost: “Free Lavasoftware Products”. At the same time if you have a look at the complete list of requested rewards in section 6.3.3., you can notice an interesting fact that there were many users who voted for not having any kind of reward from the company for their contribution. In the user comments that were received from the Beta Testers as an answer to what reward or reputation they would like to receive, many users clearly indicated that they are doing the Beta Testing to help the company and would not like to receive any form of rewards. Some users even seemed offended when they were asked this question. Taking this fact into account, it would sound reasonable to provide the option for users when they are creating their user profile to choose if they want to take part in the rewarding system or not.

One other interesting finding about the rewards is that some beta testers mentioned they would like to be able to extend the level of their help into a higher degree as a reward for their current activities. They mentioned that they would like to help in translating the software into other languages voluntarily as a reward for their contribution for Lavasoftware.

5.6. Information Visualization (InfoViz):

(Solves problems c(v), q(xiii), l, iii, b(iv), p(vi), n, d, m(ii), g, i(ix) & vii)

One of the major problems being faced in online communities (which is also listed as a result of the survey performed in this work and is grouped under problems m and g in section 4.4) is the exposure of the viewer to large bodies of text being written by other community members in forms of comments, reviews, blog entries, wiki articles and etc and their transient nature: the constant creation of these entries in any given community makes it hard to keep up with the information flow and results in the already checked entry not to be valid anymore as a result of a possible new addition that might occur in the content. Hence representation of this information in a visual form enables the observer to browse through these data more efficiently, find the content that is more valid in the given time and find what might interest him easier.

As Ben Shneiderman pointed out in a speech held at Visual Forum (Gothenburg, March 2009), high quality statistical data is generally recognized as “public good”. But what will make this public good even better is figuring out a way to represent it to the user in a visual and understandable way. Information Visualization can be a great utility in reducing the cognitive load on users of a system who deal with large volumes of data that needs rapid processing and referral for better understanding of the system or situation. If the dataset gets changed on real-time in a constant manner, this cognitive load will be even more troublesome. The lack of such a facility in well-known online social communities on one hand and the users’ desire in such networks for extracting knowledge rapidly and efficiently on the other hand was the main motivation to put InfoViz into my focus for this Master thesis.

Using these systems enables the users to analyze and interpret vast amounts of information and make important decisions. Considering the amount of time this facility would save for both users and the social network administrators (e.g. in statistics gathering tasks for the company staff), this field definitely needs attention and in-depth analysis of the best ways to design and facilitate them for MyLavasoftware.

After studying this field and seeing the related works performed by others in various contexts, what I came to believe in was to design an InfoViz system based on the concept of “**simplicity**”. The related works performed in this area made me believe that the more parameters included in one view of the InfoViz system, the harder it would become to decipher the information.

Another important factor in my visualization approach is emphasizing “**no learning prerequisite**”. What this indicates is that the viewer should understand what he is being presented with, without the need for looking at a help file and figuring out what each element means. The reason for putting this aspect into my focus was my experience with some information visualization works in which only aesthetic factors of visualization were being considered (information aesthetics, www). The downside these types of information visualization works bring is that analyzing the data that is being presented requires the observer to read the explanation of what each element means. Although this is not a wrong approach at all, it is not a useful tool for online social communities where information visualization is to reduce the cognitive load created from the mass volume of information a user is exposed to on a daily basis.

Since the main concept of using InfoViz in MyLavasoftware is to help users avoid spending too much time in high quantities of data for getting the information they want, including fewer parameters in one view would be a more preferable approach. But in order to make sure users would have easy access to what they are looking for, various views based on various parameters for the same dataset should be provided, and users need to be able to change the view according to their needs (through direct interaction with the system). But at the same time, this customizability needs to be simple enough to support simplicity and reduction in the learning curve. The system should also provide immediate feedback as well as user steering to enhance the trust in using such systems.

As a result of all the above design decisions for the InfoViz system, my proposed visualization techniques will include one-dimensional and two-dimensional data types being presented to the users of the community. The interaction techniques will contain: Dynamic projection, interactive filtering, interactive zooming and distortion (please see section 5.1.3 for a brief overview of these techniques)

The design choice for my InfoViz systems follows the rules below:

- User interaction through zooming, panning, rotating, filtering and distortion
- Changing parameters to be displayed by a single click of a button
- Avoiding visual clutter by allowing users to choose between the number of parameters to be presented within a single view and also using simple backgrounds
- Providing the ability to select individual data elements in the current view to extract attribute values in detail level

5.6.1. Implemented Information Visualizations:

Samples of the visualization techniques that can be used for MyLavasoftware can be seen in the following sections:

Today’s snapshot (Figure 5.15) summarizes the most talked-about words within the community in a textual format. What makes this work as an information visualization is the use of various font sizes for the presented words to illustrate the degree to which a specific topic is being talked about and also the use of colors to indicate if the topics are voted positively (orange) or negatively (blue). The color choice in here is based on the common convention of using warm colors (like red and orange) as positive indicators and cold colors (like blue and black) as negative indicators.

This type of presentation is referred to as ‘Tag Clouds’ and has already been implemented in sites like www.maneyes.com. Tag clouds are visual presentations of a set of words, typically a set of tags, in which attributes of the text such as size, weight or color can be used to represent features (e.g., frequency) of the

associated terms (Halvey, Keane, 2007).

The connection lines are also another visual element that will connect related topics together: e.g. People who talked about Ad Aware, also talked about Connection error and Definition File (Figure 5.15)

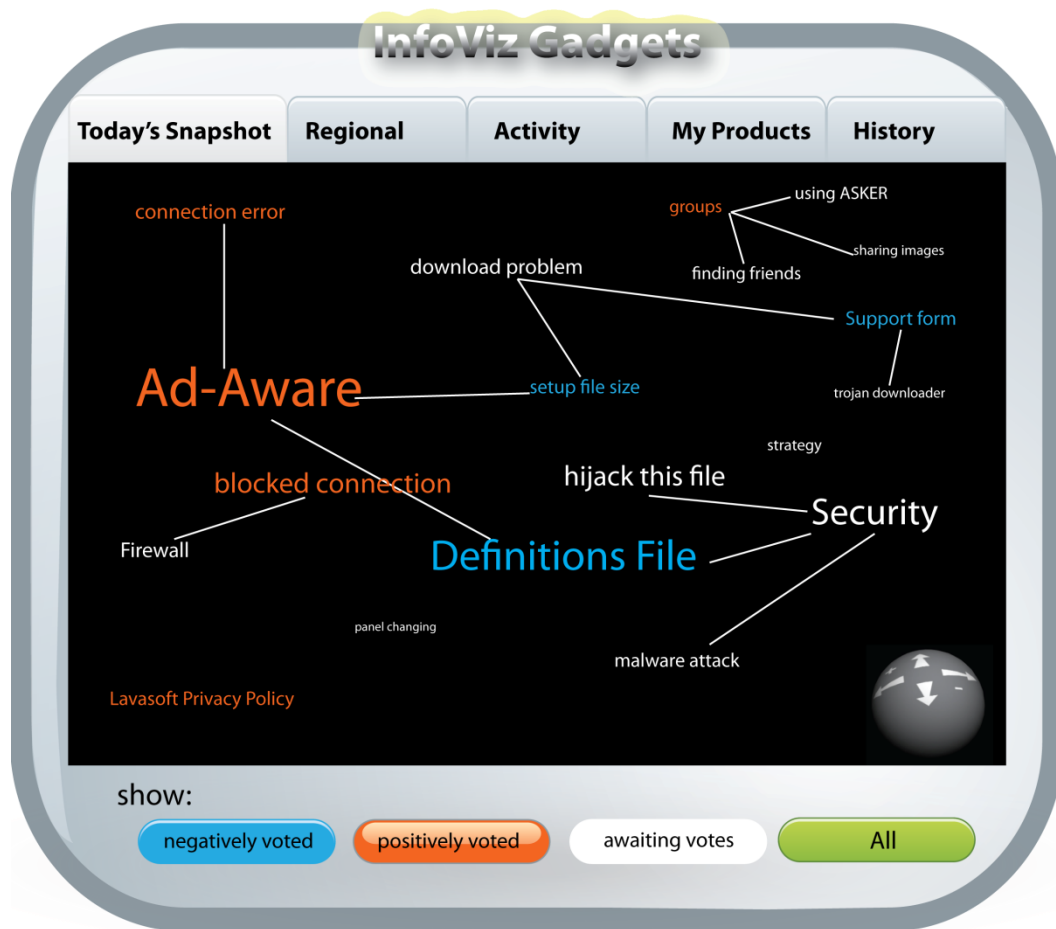


Figure 5.15: Today's snapshot InfoViz

Each of these words can be clickable and lead the viewer to the actual pages the talks are happening within the community.

The benefit of this type of visualization is the quick update it provides the viewer with which can be critical in knowing the happenings within the community; e.g. the above example can be an indication for the viewer that there is a connection error happening in Ad Aware and it might be related to the setup file size which in return might be a reason for the download problem.

In addition to presenting the commonly used terms, the name of members with high amount of activities can be presented in the Today's Snapshot visualization as a way of user encouragement. For another application of this type of visualization, please see section 5.8.3 of the 'Asker' application.

The navigation tool in the gadget (the gray sphere with directional buttons on it as is shown in Figure 5.15) will help the user to zoom in to any specific data and get a better and more detailed look of the information he is viewing (the more the user zooms in to a specific data, the more details and statistics will be revealed to him about that particular data element).

The **Regional visualization** (Figure 5.16) is a two dimensional visualization that can be used to represent region-based statistics to the observer. If the observer is a customer of a specific product from the

company, this information can be of interest to him, since he can know how many people from his country or a region close-by are using the same product, what their opinions are and other talks around that product.



Figure 5.16: Regional InfoViz

On the other hand, if the observer is a company staff, this information will be of great value to him by providing him with statistics of product downloads, talks and the regions the products are most being purchased. A sample scenario of use for the company employees can be as follows: The staff can know if a specific product is running low in download rates and hence can focus on figuring out the reason for it and find a possible remedy.

The regional visualization is not merely restricted to product related visualization. It can also be used for member-related statistics. A toggle button to switch between 'products' and 'members' can be used and member-filtering criteria like: online, just joined, purchased product and etc. can be added (this feature is not added in Figure 5.16 design implementation).

In Figure 5.17, a zoomed in view for a specific country is demonstrated. As it can be seen, a detailed percentage of product downloads in all the continents within the USA is present in this view.

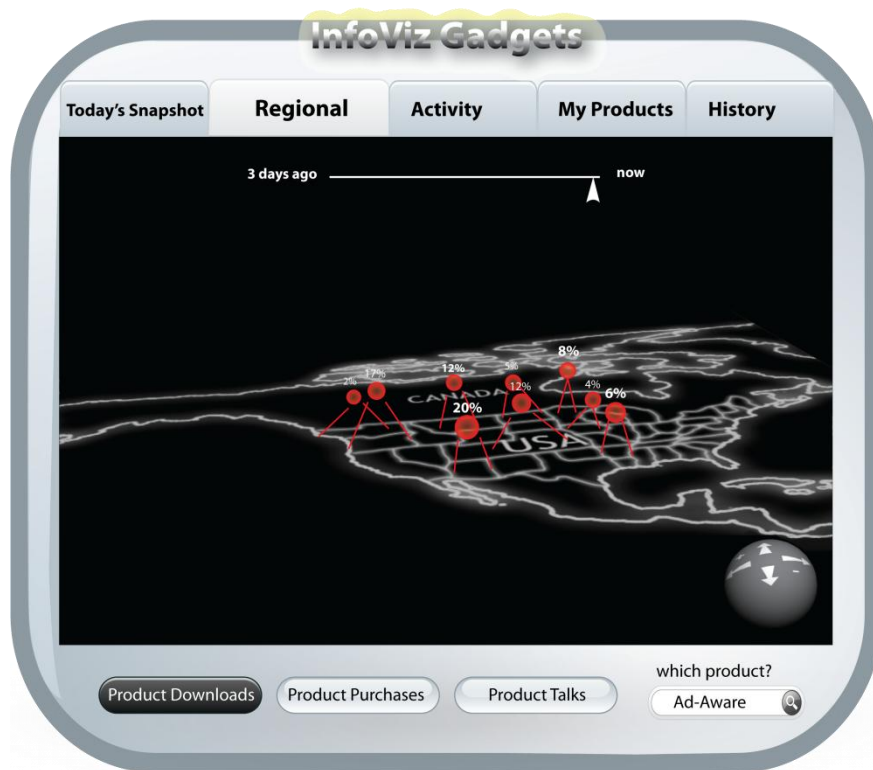


Figure 5.17: Regional InfoViz Zoomed in view

A timeline is provided for the InfoViz gadgets so that the viewer could change the current view to sometime in the past. This is a useful feature especially for the Lavasoft staff, since it can help them follow specific trends in customer behaviors and quickly pinpoint any suspicious change: e.g. a sudden decrease in product downloads between two consequent days in specific regions.

Although the timeline feature in the Regional visualization can be beneficial for the normal community members too, but the real benefits this feature will have for the community members is more obvious in the Activity section, where the user can follow up the group activities of either his team or other teams as is shown in Figure 5.18:

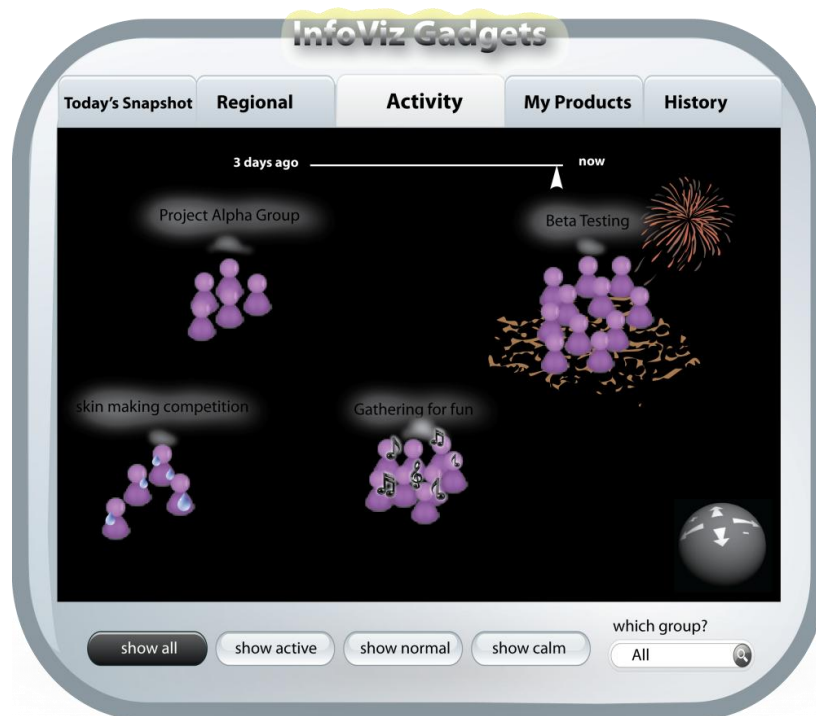


Figure 5.18: Activity InfoViz

Activity visualization is a useful tool to provide the observer with a quick glance of the happenings within the groups formed in the community. In the example brought here (Figure 5.18), various indicators have been used to represent the happening within a group. The used indicators and their description are as follows:

- The groups with the sweating icon represent a group with a lot of activities that are postponed and require user attention; e.g. many unanswered questions, no votes for a specific task and etc.
- The groups with dust around them and a fireworks represent people who have been really active within their group and have actually accomplished something (the firework can be used as a sign for accomplishment)
- The group with music icons can be general interest groups that work within a specific field together (e.g. music composition)
- And the group with no icons will be normal groups with average rate of happenings in them or newly created groups that have just started working

It should be noted that the number of user icons (the purple buddy icon) would not represent the actual number of users within a group since this will result in a great amount of visual clutter in larger groups. Instead, icons can be used in a scale to compare the size of various groups being represented on screen (e.g. in the used example, the 'skin making competition' is the smallest group with the lowest number of members). Further group details can be shown if the user zooms in to a group using the navigation tool.

In the above sections, 3 samples of information visualization that can be used in MyLavasoft have been illustrated and talked about. The other two parts of this visualization gadget, 'My Products' and 'History' can be a part of future work in this field and will not be presented in this project, but will be briefly introduced in the following paragraph:

The 'My Products' section can be used to represent the current products a user has purchased from the company and their relevant statistics. This could then further be extended to suggestions for new products

to buy based on graphical representation of product features and comparisons and providing the viewer with decision support.

The 'History' section can be used to illustrate the activities a subject has performed in various parts and different times within his community life cycle in a graphical manner.

Another example of the use of information visualization in this project is the Friender gadget, which is talked about and explained in detail in section 5.7

What has been presented in this section in relation to information visualization is just a series of samples of use domains for visualization techniques in online communities and the great values they bring upon their addition to the community. The work presented here should be considered as an introduction phase for the company to get to know the visualization techniques and become familiar to the benefits their usage will bring to the community and the company.

It should be noted that this is not a detailed work in information visualization field for online communities and a more in-depth analysis and practice needs to be done in this regards as is explained in section 7.2.2.2.

5.7. "Friender" Gadget

(solves problems $a, e, f, h, q(xiii), l, i(ix), iii, b(iv), p(vi), k, j, m(ii) \in d$)

In the current social networks, it is not easy to find and become friends with other people unless they are your real friends and you know their name or email and can directly search for them. If the aim would be to find friends with certain characteristics or to look for teammates with a specific knowledge that could help out in a project, the social network usually does not make it easy for the user to reach this goal.

The most common feature social networks today are providing users with is suggesting friends to them through applications like "Suggestions" (Facebook) or "People you may know" (LinkedIn). The idea behind this method is to suggest the user with a random friend of a friend from his network of friends with the hopes of them knowing each other or maybe becoming interested in making a friendship based on the common friends they might have.

What I am looking into in this section is designing a "Friend Making" application that takes away this barrier and provides users with a more easy to use and efficient way of making friends. My aim is to help users in finding and making more friends through the chain of relationships. I will refer to this application as "Friender" from now on.

Why is enhancing the friend making process so important that I have considered allocating a part of my project to this matter?

The answer lies in the fact that the friend relationships build the foundation for other parts of the community to be built upon. Friend relationship creates the base for further online interactions. If the subject's social network of friends is well built and has strong bases, then his activities will get better directed and enhanced. He will know where he is standing in between thousands of other users and will get reminded of what he is there for. If the subject makes a mistake in a process as he moves along in his social online activities, the right people will be around to correct him and help him out. Since the proposed application could also be used in the group creation process, and actually is a very fundamental part of this process, the above-mentioned benefit appears even bolder.

The basic idea here is to offer a design that would enable the user to look into his network of friends and be able to find the people he is looking for among them as quickly and easily as possible. The purpose

could be either for establishing a new friendship, seeking help from an expert in a specific field or simply interacting with the current friend he has already established a connection with.

It worth mentioning the Friender system can also be used by the company to perform customer-related and user-related searches in an easy and less time-consuming way. The current system the company is using to perform these types of searches is limited to performing search queries in customer databases and retrieving textual data out of these queries. These data will then be transferred to charts for easier presentation and analysis. But this whole process can be performed in a more efficient way by the integration of the proposed Friender system that is to come in the following sections.

5.7.1. Detailed problem domain and possible solutions

What is currently forgotten in social network ties is the semantic of friendship. Although there is recently recommendation systems introduced in online communities like Facebook and LinkedIn, the type of friendship or the friendship bond between two users is not shown or considered in those networks. This inconsideration consequently results in the relationship between two users not to be dynamic enough.

Although LinkedIn uses a strategy to indicate the level of relationship between users, but this attribute is not used to its maximum extend and the degree of benefit extracted from it is limited. What LinkedIn uses is a level number that it refers to as: “degree” to indicate the degree of relationship between two users. Here is LinkedIn’s own description of its friend network and degree system:

“A network is defined as a group of LinkedIn users that can contact you through connections up to three degrees away. You are at the center of your network with the following degrees of connections:

- Direct connections make up the 1st degree of your network.
- Connections to each of your direct connections make up your 2nd degree.
- Connections to those in your 2nd degree make up your 3rd degree.

Figure 5.19 represents this degree system in action:

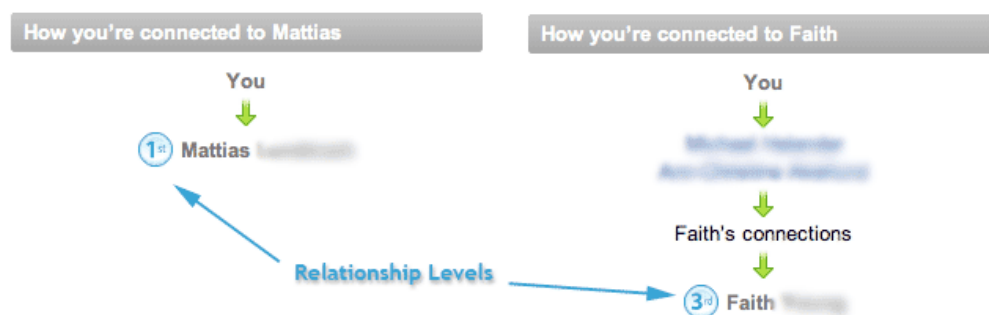


Figure 5.19: LinkedIn's connections diagram

My identified fault in this design is its weakness in enabling the user to expand his network beyond the introduced degree and hindering the user in being able to base his connections on things like field expertise, similar interests and so on. Although it is still possible to send friendship requests to anyone within the LinkedIn network (whether or not they are in your 1st, 2nd or 3rd degree connections), but this requires knowing that member's name or community id.

It is notable that there is a search function in LinkedIn that might seem to have overcome this barrier: Users can search based on the type of person they are looking for by using the “Search People” category

of the Search function. But what they end up with is a long list of users that need to be looked into one by one in order to find the perfect target user.

So the problem domain can be categorized as follows:

- Limitation in moving in the chain of relationships
- Unclear relationship types
- Lack of an easy way to look for the right people in the result of a query

As a result, the proposed “Friender” application for MyLavasoftware should be designed in a way that would overcome these current design flaws.

The application should enable the user to move deep in the chain of relationship without any limitation:

The only limit could be when a user has explicitly indicated that he would not like to appear in the network of friends. This option can be presented to the users when they are creating their account and it is recommended for it to be also accessible through the user profile setting later on. A suggestion is to present the users with a Boolean value of which they need to choose from either “Social” or “Isolated”. A social user will appear in the chain of relationships and the isolated user will not. This naming convention is expected to encourage the users to choose the earlier alternative since people might be unsocial, but they would prefer not to be referred to in that way and hence might be encouraged to socialize by choosing the “social” option. This idea is a hypothesis and further investigation might be required to prove its validity.

It should be noted that even if a user has set him available to appear in the chain of friends, becoming friends with him would still need his acceptance. So a request will be sent to him and friendship will only become possible if he accepts this offer. This decision is to support better security and user privacy in the community.

Relationship types need to be categorized and presented to the user in a distinguishable graphical way:

It is important for a user to figure out the type of relationship he has established with a user within his own network of friends. This attribute could also come handy when trying to look for a specific person within the chain of friends: e.g. If a search is done based on all the MyLavasoftware members who cooperate together on a project, a search filtered by “teammates” should be a possibility.

As the advantage of the facilitation of information visualization has been discussed in an earlier section, using a graphical way to represent relationship types (most probably this will be a high value of data in larger networks) is a reasonable approach.

The system needs to be easily navigable with its elements visually presented to the user:

The current social networks use the normal text/image combination to represent friends and the result of searches are returned in a form of a normal long list. The lack of a graphical representation of the network of friends is most probably the major barrier in the way of the users to explore and expand their network on logical bases.

A graphical representation of a friend’s network will make it easier for the user to navigate within his own network of friends as well as going further and navigating in the network of others who have set the permission.

5.7.2. What is good to add?

Learning from others is always good and is an experience earned cheap. In the previous section, I mentioned the flaws that I believed the friend systems in current social networks have and my design suggestions to avoid these flaws in the proposed “Friender” application. What would also be nice to

include in “Friender” is the good aspects of the current online social systems alongside avoiding their flaws. Here is a summary of some of these positive points that I have found by studying LinkedIn (www.linkedin.com), Twitter (www.twitter.com) and Facebook (www.facebook.com):

- A filtering or search criteria to limit the number of users visible within the network (the same as the categories to search in LinkedIn)
- Friend lists to enable the user to organize his network of friends in a manageable and easy to remember/find way
- A “who has viewed me” feature to let the user know what types of people are interested in knowing him

5.7.3. The First Design

After performing an analysis of the current friend systems and pinpointing their positive and negative points, an initial design for the “Friender” system was created. Below is a description of how this first design is supposed to work:

When the Friender application is launched, the user will appear in the lower right corner of the screen and his connections come into view as icons surrounding him. Of course, screen size limitation makes it impossible to show all the friends around him at once, hence a circular scrollbar comes to play here. A slider at the top will be used to allow users decide how deep into the chain they would want to go. The level could be up to 5 degrees. But this does not mean that when you reach the 5th friend of friend, it would be the end of the line. The subject can always double click on a friend and enter his chain of friends in return. This section of the “Friender” design is to overcome the limitation of navigating in the network of friends and making it possible for the user to have an expanded view of this chain of relationships.

As is shown in Figure 5.20, a line represents the connection between two users and an icon shows the gender of users. The red/black color on the icons is used to reflect the online/offline status of the user respectively (these colors are general indications for the on and off states). The reason for bringing this indication (online/offline status) in the first prototype is to analyze whether or not adding this information to the friend hierarchy view would lead to visual clutter and confusion in the observer.

It is a common practice to use graphs to present interdependencies between objects (users in this case). A graph consists of a set of objects, called nodes (which represent users in my implementation), and the connections between these objects are called edges (which represents the friend relationships in “Friender”). This type of visual representation provides a neat and easy to navigate overview of large amount of data (network of friends) with their detailed connection statuses.

The user can choose what type of users he wants to see by playing around with the options in the view section; e.g. choosing the degree of sociability and activity of users one is looking for with the following variables: high, medium and low

This filtering feature is one of the most important parts of the Friender design. The purpose of this part is to narrow down the network of users a subject is navigating in by using some measurable attributes to base the query on. The attributes used in the first test design to filter with are: sociability, activeness, user roles and connection type. These attributes have been used as an example, and user feedback is required on them to help expanding the list and possibly eliminating the unnecessary attributes

Below is a snapshot of the first proposed design for the Friender application:

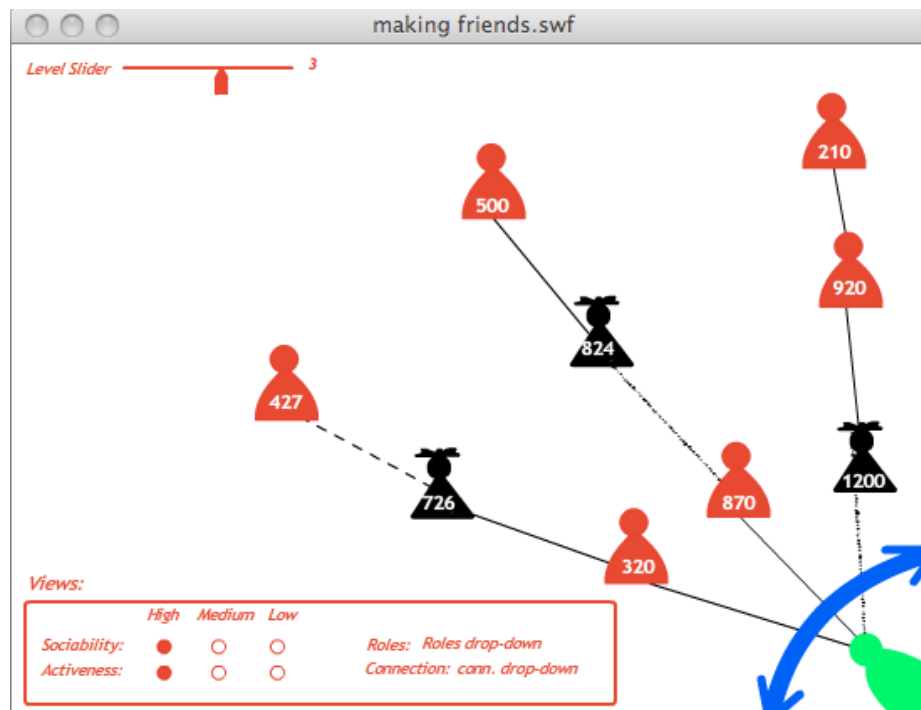


Figure 5.20: The first design of the Friender

As it can be seen in the above image, different types of lines have been used to connect two user icons. The type of line (dashed, dotted, etc.) is used to reflect relationship types that include:

- Professional
- Educational
- Teammate
- Family member/in a relationship
- Friend
- Random/Have not met

It should be noted that in order to increase the network security and trust between users, setting the relationship type between two users should be based on common agreement: the user who is setting this relationship should receive the acceptance from the second user for the relationship to be validated.

In order to enable the viewer to find out more about a specific user if he intends to, the panning and zooming technique of visualization (section 5.1.3) is used in here: hovering over a user in the chain will pop up that user's picture and some tools to interact with him will be revealed (see sections 5.7.4.1 and 5.7.4.2 for a more detailed description of the tools that would pop up). The subject can also choose to go to any selected user's chain of friends if he has set this permission and perform the exact same actions described above in his chain. This feature is to enable unlimited network discovery for subjects while looking for new users.

The number shown on each icon is used to represent the number of friends a single user has. This could be helpful in selecting someone within the hierarchy to look for more friends to add (if a user has more

friends, the chance of finding the special user a subject is looking for within his network of friends is better than for a user who has a few friends)

In this initial design sketch, one decision was to represent the **closeness of relationship** in the Friender system. The closeness of relationship between two users can either be calculated automatically or be set by the user himself. If calculation is the desired method, then the inward and outward communication between 2 users can be the criteria. (Inward communication would be the messages, posts, comments and content in general a user receives from the friend in question and the outward communication is the content being sent from the user to other parties). In summary, the closeness of relationship refers to keeping track of the number of times two users have contacted each other to represent the social bond between them (closer or farther away icons).

The closeness of relationship between friends is an attribute that has its own benefits if included in the network hierarchy. The advantage of it lies in the fact that a user will be able to monitor the amount of activity he has with a specific user (or even two other users have between them) and make decisions based on it. This attribute can be represented using proximity of icons from one another: the closer two users in the hierarchy are, the closer relationship they have. Another implication including this attribute in the system has is the added capability for identifying the strong and weak nodes within the network.

The expected benefits the proposed Friender application would provide the users with compared to the current friend systems are:

- Expanding the network of friends based on trust and common roots (after all you are not picking up people randomly and are doing it on a logical basis)
- Tailoring the search for friends and people according to specific wishes and needs. This process can be extremely helpful in group creation where subjects have a specific goal from forming the group and are looking for users that match this specific goal
- A visual way to easily navigate within one's own and others' network of friends

At this phase, the Low fidelity prototype was created as a flash mockup and user tested by eight Lavasoft employees. The reason for deciding on having the evaluation in a low scale and internally (in the company) was based on facts like:

- time limitations
- participants' familiarity with the environment and the project scope and hence decreased stress factors and amount of mistake in their implications and feedback and their enhanced performance
- the common goals of the participants (aiming for the good of the company) which resulted in putting more effort in giving feedback and suggestions of improvements

5.7.4. Evaluation results and Redesign of the Friender

All users liked the proposed way of looking for friends and making new ones, especially if the purpose is to create groups of general interests. The idea of using different types of lines to indicate the relationship type between two people was highly appreciated as well.

The most discussed issue here was whether to distinguish between family_ in a relationship and friends' connections. But after an interesting indication from one of the testers, I decided to keep these relationships distinguished. The indication was:

"What if you are looking for all programmers who are in a relationship within the network?"

This might not sound relevant to the purpose of what the social network is being designed for, but is an

interesting ability and as long as the users set the permission themselves whether or not they want to reveal this information to others, it can be represented in the friend hierarchy.

Some design improvement suggestions that were either indicated by the evaluation participants directly or was observed based on their behavior while using the system includes:

- Representing the degree to which the presented people in the hierarchy match your selected criteria. The suggested ways to represent this factor were:
 - o Using the connection line thickness between two friends: the thicker the line, the stronger that criteria is being met
 - o Percentage values on top of each icon representing a friend to show the degree they match the filtered search
 - o Use of transparency effect (I chose this method since it was an effect that resulted in the least visual clutter)
- Adding a second slider to select the number of branches you would like to see under each friend within each level. This idea rises up the issue of visual clutter, but it can only be determined as an accepted or rejected idea after implementation in a prototype.
- Suggestions for filtering criteria:
 - o Common Interest: This would be a 3 level (high-medium-low) option and the comparison is based on the general interests users select in their profile creation process.
 - o Product (would help Lavasoft to target specific groups of its users: e.g. users who have Anti Virus Helix)
 - o Fan of a specific person/activity
 - o Profession: A drop down list with available professions that people currently have within the community (e.g. teacher, student, programmer). There could be a sublevel dropdown appearing after the user has chosen the main profession to narrow down the search and make it more specific (e.g. if you have chosen programmer, the sublevel search could be a list of programming languages like C++, Delphi, Java and etc.)
 - o And more criteria could be added later on as more features are included in the social network, like Members of club (e.g. security, mobile communications, cloud computing and etc.)
- Adding a toggle button to change modes between: “Friend Finder” and “Friend Browser”
This feature will be useful for providing the tools you need in each specific mode: e.g. a chat option should be available in the “Friend Browser”, but not in the “Friend Finder”. This is to ensure user privacy and avoiding disturbance. A PM system could be used in the “Friend Finder” mode instead of the chat system.
- A better way to represent the closeness of relationship, since the proximity method will result in visual clutter and hard to distinguish
- Using red/black as an indicator for being online/offline did not receive any positive vote by most of the test participants. They preferred another method of illustration like a glow of light surrounding the user icon if he is online.

The new design for the Friender application based on the suggestions and tester feedbacks is shown in Figure 5.21

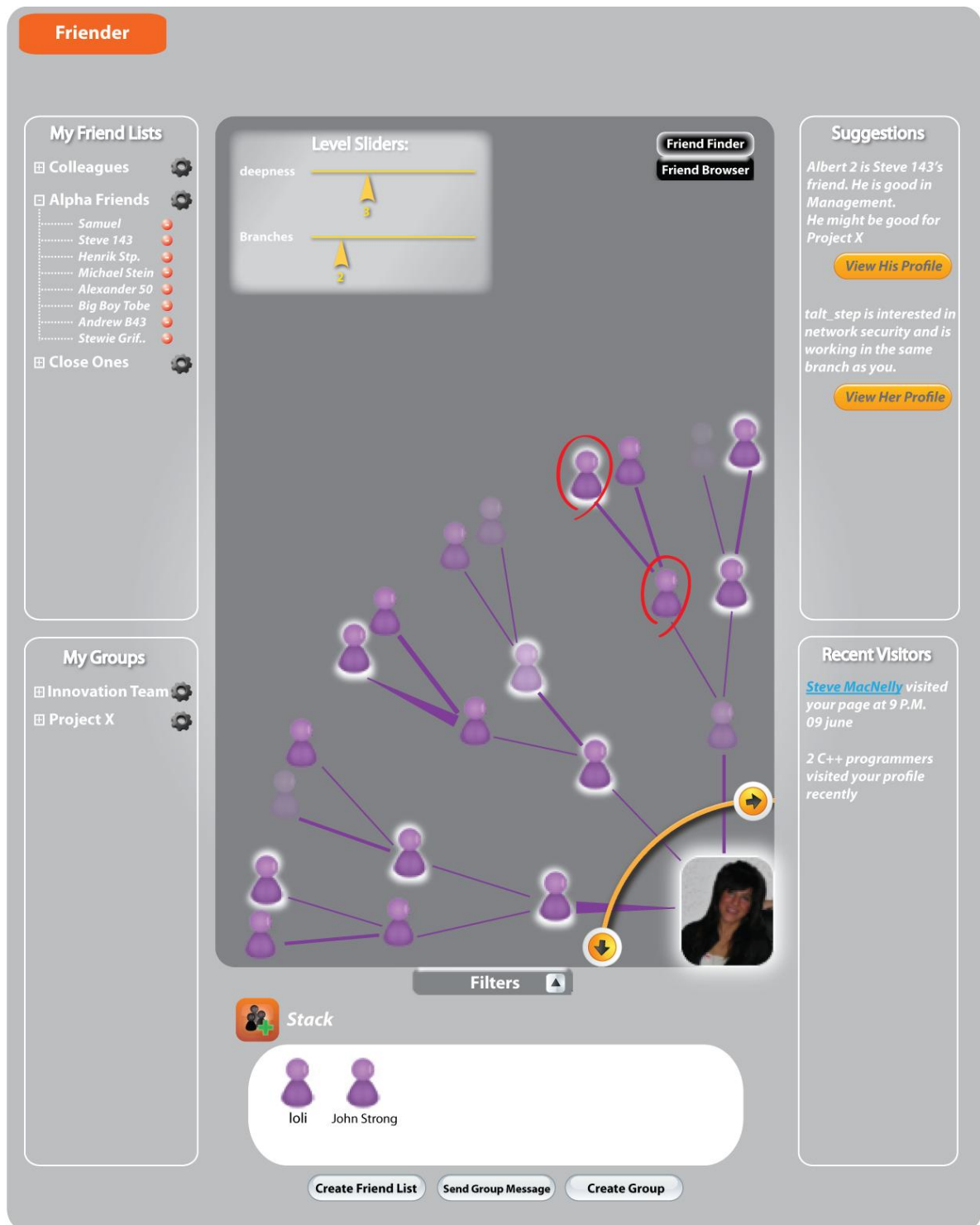


Figure 5.21: The final design of the Friender

Some notes about the above design:

- People with the glow effect are online users (this option should not be available in the Friend-Finder mode for privacy purposes. The glow effect in the above image is for illustration purposes only)
- People with the red line around them are the selected users

- People with a less transparent icon are the ones who are matching the filtered criteria at a lower rate
- The filtering panel is expanded when clicking on the “Filters” button
- The line thickness is used to represent the closeness of relationship between two users. The line can be thicker in one end, representing more percentage in the outward communication for that specific user
- The stack panel at the bottom of the Friender page is used as a placeholder in which people can be dragged into from the hierarchy. The user can later on take actions on the selected people in his stack like creating a group with them, creating a friend list, sending a group message to them and so on.

While creating a group, if the selected users are not already a connection, a friend request will be sent to them at the same time as the group invitation, and they will only be added to that group if they agree with both the friendship request and the group-joining request.

- In the left section of the Friender page, the current Friend Lists and created groups are visible. In order to avoid the current design mistake in Facebook as described in section 5.1.2.1. (not having direct access to the privacy settings for each group in Facebook), the settings for each created list/group should be directly accessible and modifiable through this panel.

To add users to an existing friend list (instead of creating a new list), the drag and drop functionality can be helpful (members could be dragged from the hierarchy into the name of a Friend List in the left pane)

- The suggestion box in the right side of the interface is used to present the user with some beneficial users in his network that he might find interesting to become friends with based on the reason the system has shown. The idea for this feature is based on intelligent algorithms that would learn user preferences by recording the groups the member is a part of, the usual activities he performs and so on to provide useful suggestions to him.
- The Recent Visitors box is used to provide the user with a brief statistics of the type of users who are visiting his profile. This information could be useful for the user to know himself better and work in improving his skills or special activities

One general strategy currently being used in social networks is to encourage users to expand their network of friends by telling them that they will appear at the top of the search results if they have a larger network. What this indicates is that having a small network will result in losing the chance of getting added by others, since you are not appearing at the most visible area of the search results. Another indication of this would be that members will try to make new friends without following their specific criteria of friendship in mind and hence end up with a large network of friends that they would barely communicate with.

Since one of the problem that was formulated in section 4.4 were the long time it takes for a newcomer to get recognized within the community and gain trust (problem h), this discussion gains a bolder value. If MyLavasoft would be designed to follow the same strategy, this problem will never be resolved and the difference between MyLavasoft and current social communities will be lost.

To avoid this from happening, a recommended design would be to follow a reverse strategy in order to help a newcomer spend less time as being the new guy within the community; meaning that users with small networks of friends should appear first and in a more visible area in the search results and in the filtered section of the Friender Gadget.

Hence, in order to support the newcomers of the community and cover problem “P” of section 4.2, the presented people in the Friender after the filtering has been applied would be sorted from the newcomers

to older members, meaning that the newcomers will be shown first in the hierarchy. Using the navigation buttons, the user will be able to navigate to the older members (days of membership can be presented in a tooltip when the user hovers over a member icon as shown in Figure 5.22)

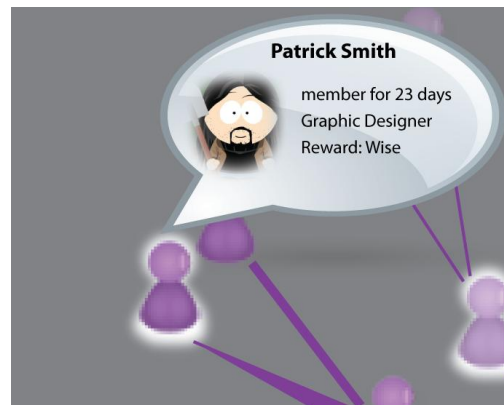


Figure 5.22: Information tooltip in Friender

Other visible information in the tooltip includes: member's image/avatar, full member name, his role and rewards received (if any)

5.7.4.1. The Friend Finder Mode

The next step after choosing the people you want to be friends with is to set the selected friends to a specific category (either defined before or a new one). The purpose of this step would be to set the level of permission the new friends will have within your profile (e.g. the content from your personal data that would be visible to them). This step will satisfy the need for a good privacy management system. Other aims include: Ease of navigation and access to specific friends, the ability to send something to a group of friends without having to do so individually, getting a quick glance of the latest happenings with a specific group of people and so on.

Users should be able to name the categories as desired and have the ability to customize the privacy details for each group individually. This system is already in use in Facebook as mentioned in an earlier section of this report (section 5.1.1).

The stack tool in Friender (Figure 5.21) is used for this purpose. Subjects will be able to drag the users they want into this stack and then by pressing the "Create Friend List", they will have a group of their friends put together in one place with the same privacy settings.

What is important in this regards is to make sure that permission levels would cover a wide range of profile options and allowing users to have various combinations of this permissions so that they would be able to best manage their friends and the content visible to them. This design proposal will help in resolving problems "a" & "e" of section 4.4

The motivation for this design choice was its strength in enabling the user to freely do what he wants with his profile while making sure that only the right people would get updated about it: e.g. A user might not want his co-worker to constantly know his status, while he still wants to be friends with him and share other contents.

But what implications does the above-suggested process have for the group creation?

Using permission levels in the group creation process can provide the user with the possibility to set a border for his internal group activities. In this way, internal group activities could remain safe and out of view of outsiders. A sample case scenario would be a group that is formed to develop a gadget for an application. In this group, programmers will be sharing and exchanging pieces of codes and they might not want others to gain access to it. By making permission levels for group activities, this safety will be

ensured within the formed groups.

In other words, allowing users to create their own groups of interests and then letting them set the permission levels for data access to non-group members, has the benefit of allowing the group members to express themselves more freely within the context of the group activity.

The above-mentioned tools are available through the stack panel ('Create Friend List', 'Send Group Message' and 'Create Group' options). However, there is another form of interactivity available in the **Friend Finder** mode: Direct gadget surrounding a single selected member.

This mode is added to the interface so that other one-to-one communication scenarios could be covered: e.g. sending a Personal Message (PM), asking a question (see the Asker application in section 5.8), adding the selected user to a list and inviting him to a group (single user invitation). The proposed circular gadget can be seen in Figure 5.23:

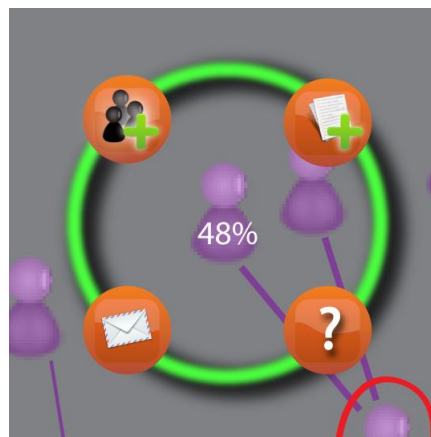


Figure 5.23: Friend Finder Mode

The associated actions for the icons from left to right, top to bottom are as follows:

- Add to a group
- Add to a Friend List
- Send a Personal Message
- Ask a question

The percentage value in the middle of the icon is to show the degree to which the selected subject matches the filtering criteria applied (a numerical presentation of the transparency feature introduced in page 65)

5.7.4.2. The Friend Browser Mode

As mentioned earlier, the proposed Friender system would not only be used in the friend finding process, but can also be a useful tool to determine where the user stands within his network of friends by providing an easy to use visual navigation tool. A simple toggle button can provide the switching of the functionality between the proposed two modes: Friend Finding and Friend Browsing

When users are in the Friend-Browser mode, they have the possibility to see which of their friends are online/offline, what's their status, what is the latest activity they have done or are doing in their network and etc. all in a quick glance! (These options are not available in the Friend-Finder mode for privacy purposes)

The filtering option should still be available in this mode, so that users could perform the same type of search within their own network of friends (this will be useful for cases in which users are looking for teammates for a specific project or want to ask a question from their friend with a special expertise)

By selecting a friend, the following tools will appear and become available to use as shown in Figure 5.24 (the listed tools correspond to the icons starting from the top and moving clockwise):

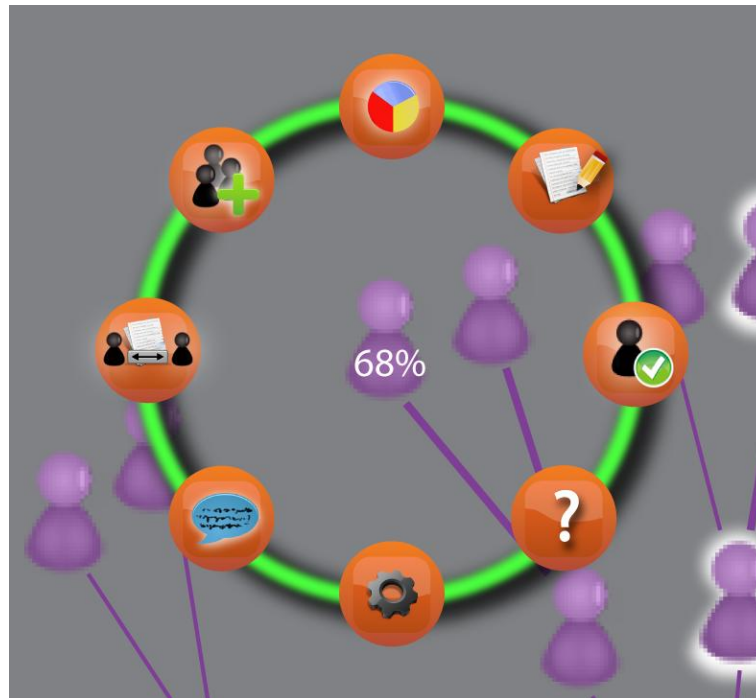


Figure 5.24: Friend Browser Mode

- View the statistics of the subject's own communication and interactions with the selected friend
- Assign to a different "Friend List"
- "Recommend" to someone
- "Ask" a question through the 'Asker' application
- Set/change relationship type/permissions
- Talk/send offline message
- Share file(s)
- Invite to a group

One question that raised during the design process of this gadget was whether to use a 3D carousel or a flat 2D navigation system (the original prototype that was tested was a 2D presentation and the users were asked to compare it with a tool that was in form of 3D and was used as an add-on for Facebook to navigate in the friends network), and all the votes went for the flat interface and the argument was that the 2D interface was easier to navigate and handle (it is usually easy to get lost in 3D navigation environments).

5.7.5. Friendship Reminder System

Another idea that came into play later on during the design process of the Friender application was the addition of a reminder system that would intelligently remind the user to change the permission level he has previously set for a particular friend if it detects a change in the communication level between two friends.

This idea has come from the reported experience from users who used Facebook (this is from my own findings while consulting my friends in Facebook about this issue and it has not been recorded officially in

this report): the experiment they had was that in the beginning of their friendship with someone they did not know from before, they would restrict the profile access permissions for that user for security reasons, but later on when the connection bond between them improved, they would forget to change the restriction they have set in the beginning and this resulted in the other party to get offended. As a result, the idea of having a friendship reminder system took shape: the reminder system could calculate the number of communications between two friends and save it in a counter. If the value of this counter would have a dramatic change, a reminding message could be sent to the user, suggesting him to change permissions accordingly.

Another benefit this method will have is in determining the connection strength between two users (**closeness of relationship**). This strength is shown by the thickness of line between two users in the final design of the Friender application (Figure 5.21) and as indicated earlier, is useful for when a user is simply trying to figure out where he is standing in his network of friends and who he is having the strongest links with.

5.7.6. What's next?

The work performed in the Friender gadget needs a user evaluation as all new interactive systems usually need. The Friender gadget can be considered a work done in the field of Information Visualization since it provides the user with a visual way of mapping his network of friends and make new ones. Hence, the user-evaluation becomes of more importance to check whether or not the used metaphors are easily understandable for the user and the system actually reduces the cognitive load and is not increasing it.

In the first attempt for evaluation, the current proposed system needs to be user-tested and all the covered scenarios like adding a new friend, creating a group of interest, adding a friend to a friend list and etc. be tried out through task-based usability tests.

After that, some design alternatives could be implemented and put into action through interactive mockups. One suggestion for the future work in this matter will be to provide two navigation alternatives for the viewer and user test them in order to decide on the best option to go with:

- The proposed navigation tool in this design (a left-right, bottom-down and zoom in-out tool as is shown in the lower-right corner of the screenshots provided in this chapter)
- The use of distortion technique: enabling the viewer to see an overview plus detail on demand

This is an important step in the evaluation of the Friender gadget, since if the user has a hard time navigating in the Friender system and finds himself lost frequently while exploring the friends' tree, the Friender gadget will become a burden instead of an improvement to the normal friend-making alternative.

Another possibility of testing in this regard is again the question of whether or not to use a 3D system. To evaluate this, a 3D visualization and possibly navigation of the system needs to be provided and user evaluated.

5.8. 'Asker' Gadget

(Solves problems o, i(ix), q(xiii), c(v), iii, l, n, m(ii), k, j, vii & xi)

The replies from the survey that students took part in showed that, one of the main things they are looking for in an online community is to find answers to their questions. Since this is not limited to students and can be beneficial for people with other roles in the community as well, I have decided to work on a well-designed questioning & answering system. The name of this gadget can be "Asker"

Getting answers for your questions and finding a way to solve the problem you currently have is the strongest point of online communities and is what makes them valuable in nature. Although it is meant to be a place to socialize, but being able to resolve your problems especially in the computer field in a timely manner is what adds value to the time you would allocate to spend on a virtual social community instead of a real-world community. Hence integrating a well-designed questioning & answering system to MyLavasoft is something that will enhance the value of this online community significantly.

The company side benefits from the integration of such an application into the community should not be forgotten as well: reduced number of support inquiries from the company staff, learning what alternative solutions others have found that the company might not be aware of and also having an overview of the general problem domains and questions users have is among a few to mention.

The Asker gadget will be placed on the users' home page according to the role they have selected to have. e.g. it will be a part of the primary gadgets for students and will be placed on the secondary gadget place holder for Beta testers. Here is how the 'Asker' application will work:

The subject can ask his (her) question by clicking on the 'Asker' gadget. (S)he will only need to fill in three fields which are as follows:

The Question: the main text of the question (s)he wants to ask

The Field: the area in which the question mostly relates to. A smart text detection system could be used here to scan the words in the text of the written question and suggest a field that most probably it relates to (the same system is used in the Yahoo! Answers application <http://answers.yahoo.com/>). The user will be able to select a field that the text detection system has suggested. The reason for suggesting the smart text detection system is to increase the rate of finding the right people with a set expertise to answer the question at hand.

In case the system comes up with no suggestion (a field being typed does not exist in the list of fields in the system), then the user can add the field himself. But a notification should be sent to the company staff to approve that field to be added to the system. This is to avoid the system ending up with numerous different fields that would almost be the same, but have a different name to them. Spelling mistakes can also be avoided through this design.

As it can be seen in Figure 5.25, a plus button is used in the field section to enable the user to assign his(her) question to more than one field (e.g. a question can both relate to Graphic Design and User Experience).

Below the field section, users can choose if only expert people (people who have the related field in their expertise and also have points of expertise in that field) could see their question and answer it or shall it be shown to everyone.

If the user has chosen more than one field for his question and set his question to be answered by only expert people, then his question will only be visible and answerable by users who have both expertise set for the question.

This design choice is to enable the user to narrow down the number of people who could answer his question to people with the required expertise only which could result in more trusted answers.

Who can see it: this is where the user can choose if the question would be visible to everyone within the community or if the asker only wants his friends to see the question and answer it. Alternatively they will also be given the option to choose the people they want to answer their question manually. This will be another step in narrowing down the audience for answering the posted question.

Availability: This section is for providing feedback to the user based on the selections he has made on the previous two fields. It represents the number of online and offline people who could answer the

The proposed ‘Asker’ application layout is as shown in Figure 5.25.



It needs to be noted that the user expertise field (that has been talked about in the 'Field' section above) will be set by the user in the first time he runs the 'Asker' application. This field is what determines who can answer a posted question if the option for that question would be set to "only expert people to answer the question". However, a member can lose this field or even gain a new field through his activities in the 'Asker' application as is explained in section 5.8.1.

Any newly received answers to a posted question will be shown to the subject (he will receive a short notification on the 'Asker' gadget in his profile page as is shown in Figure 5.13 for Friender and White-Board notifications). A newly answered question will appear in the list of questions for voting so that other users with the required expertise (the same as is set for the question when it is being created) can vote for the answer to that question (thumbs up and thumbs down system will be useful here) and give their opinion about the correctness of the answer. This is to increase the percentage of accuracy for an answer. Since a single question can have more than one answer, this voting system will also help the subject who has originally asked the question to decide on the best answer for his question.

My proposed design is so that a question will have four statuses:



Open: when a question is asked, this will be the primary status assigned to it and will appear in the answering box of the 'Asker' page of all users who qualify for answering it (meets the criteria that has been set in the **Field** and **Who can see it**). This status will remain for the question until it receives its first answer. As soon as the first answer is received for a question, the status of the question will be changed from Open to Undecided.



Undecided: the asker cannot figure out which answer is the best. This question will be put for voting and appear in the voting box of the 'Asker' page of all users who qualify for voting on it in the 'Asker' application to collect some quantitative data about the precision of an answer. As it is apparent, the first time a question is answered, this status will be automatically set for it until the question asker changes it manually to either "Resolved" or "closed".



Resolved: a question that has its best answer picked up by the asker but is still open for others to answer



Closed: the asker can set this status if he does not want any more answers for his question

As it is obvious from the status descriptions, the user who has originally asked the question will be the only person who could set the status for his question to resolved or closed. The other two statuses (open and undecided) will be set automatically for a question without user interference.

An issue that might rise up here would be how many questions could a single user ask in the community? In my opinion, to encourage members to seek further knowledge and be able to always depend on the community as a source for resolving their problems, there should be **no limit** in the number of questions a member can ask.

However, this approach might bring up the matter of ending up with a system, which has numerous duplicates in the asked questions. In order to avoid this, a **smart text detection** system could be used to search in a text that is being typed in the question field on real-time and list all the related questions that it detects in the system. If the user finds a question that is similar to what he is about to ask, then he can skip typing his question and click on the similar question instead to view its answers. He can even add it to his Watch-List (see section 5.10.1) if he wants to follow up on any new answers that question might

receive in the future. On the other hand, if he does not find any of the listed questions relevant to what he is about to ask, he can simply skip the listed questions and proceed with asking his own question. In this way, the chance of having duplicate questions in the system will be reduced to a certain degree.

As you can see in Figure 5.25, in the left column of the 'Asker' page, the subject can see a list of all his current asked questions and the icon next to it will represent its status (one of the statuses as listed above). These questions will be grouped based on the field they relate to for better data categorization and easier future referral to them.

By selecting a question from the list, the user can then press either the "view all answers" or the "view best answer" button. This methodology in interface design is called: "Extras on demand" and is used to support tidy interfaces for easy navigation between information (avoiding visual clutter that could be caused by presenting long strings of text to the user all at once). The Extras on demand method is used to show the most important content up front, while hiding the rest. The users can reach the extra information via a single, simple gesture (Tidwell, 2005).

What happens when the "view all answers" button is pressed?

Pressing the "View all answers" will open a pop up over the current page, listing all the received answers to the posted questions. The user can then scroll and read the answers that will be sorted by the one that has received the most positive votes to the one with the least positive votes. Image below shows a representation of the above-mentioned pop up window.

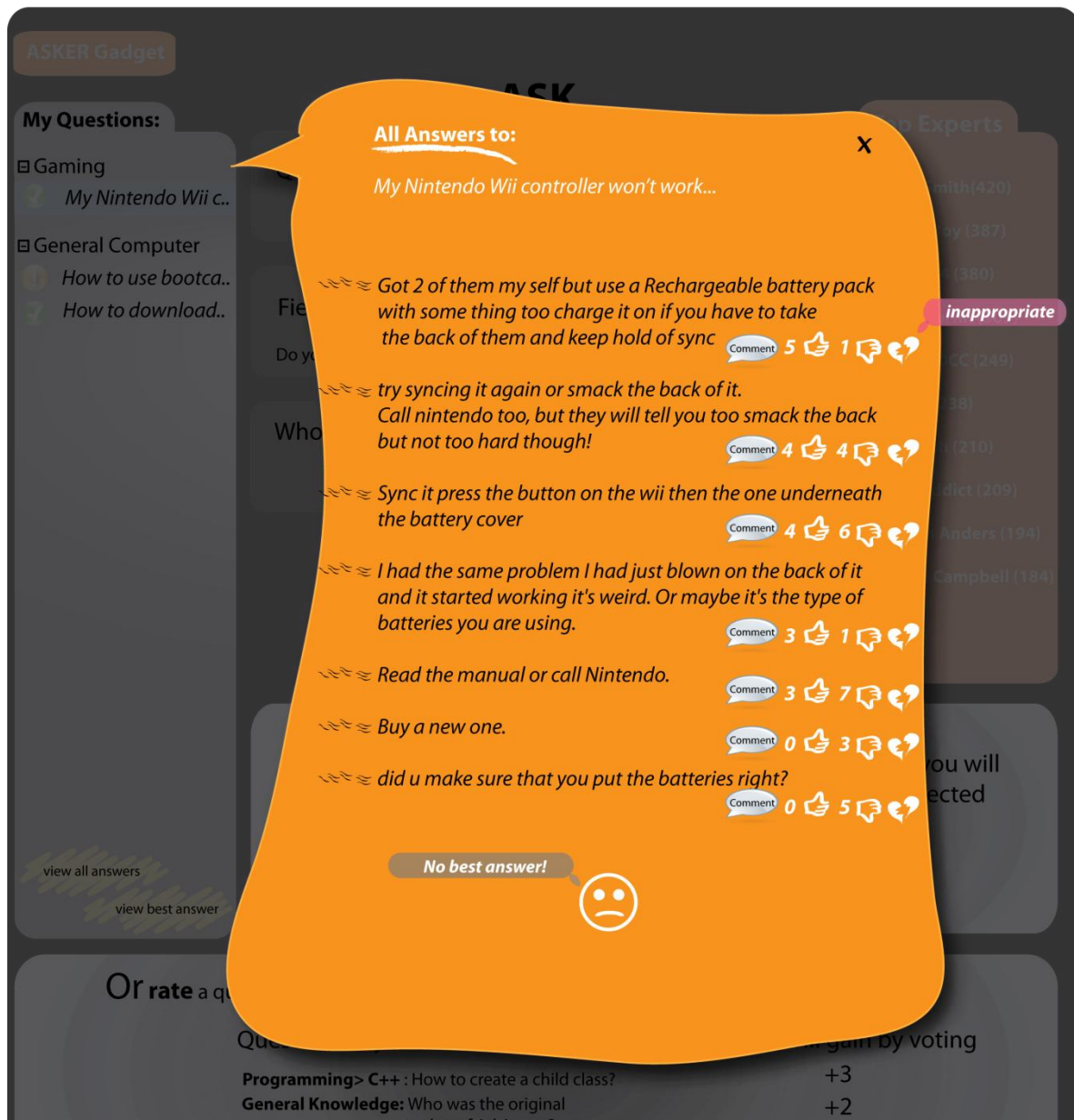


Figure 5.26: The “All Answers” view

The user who has asked the question originally will also have the ability of voting for the answers he has received. But the effect of his voting is different: if the question asker votes positive on one of the answers to his question, that answer becomes his best answer. Of course, he should be able to change his best-chosen answer at any time if he decides later on that another answer is the best answer. Simply voting positive (thumbs up) on a different answer in the list of answers can do this.

At the bottom of the “All answers to” page (Figure 5.26), there is a “no best answer” button that the question asker can press if he feels like none of the posted answers are actually solving his problem. In that case, none of the answerers and voter would receive a point for their posts. For further details on this, please read section 5.8.1

If an answer contains inappropriate content, or MyLavasoft administrators or members feel like a user is spamming the community by posting massive answers that are irrelevant, they can report it by pressing on the “broken heart” icon next to that answer. This button is called: inappropriate. When this button has

been pressed, a notification should be sent to the Lavasoft staff allowing them to read the content and act accordingly. This feature is for enhancing the security of the community and provides a collaborative experiment in the community to keep it safe from spammers.

The same system is being used in “YouTube” through a button called “Flag for Spam”. If a user presses this button, that reported video will be sent to the YouTube Team for reviewing.

If a more automated system is desired instead of a manual inspection of answers (to reduce the man hour spent by the company staff for reviewing the spam reports individually), another approach can be implemented for MyLavasoft: having a counter for any specific entry in the community as the ‘Spam Counter’. If the “inappropriate” button for any entry has been pressed a certain number of times, then that entry would be considered as inappropriate (or spam) and would be automatically removed from the system.

In the ‘All answers to’ page, in addition to the voting and spam reporting buttons, a “comment” button (the white speech icon in 5.26) is available for the subject who has originally asked the question. This button is used for commenting on any answer the user has received for his question. This feature is available so that the user can get clarified or go into more details on any specific received answer with the one who has posted that answer.

In order to enable the subject to have a time perspective on the questions and answers received for it, hovering over a question or answer could reveal the date it was posted. This is valid for both the questions column on the left of the Asker page and the “view all answers” pop up.

What happens when the “view best answer” button is pressed?

To view the single best answer a question has, the user can select the question from the list in the left column of the Asker page and press the “view best answer” button. This will show the best answer that has been chosen by the asker in a small pop up window (Figure 5.27).

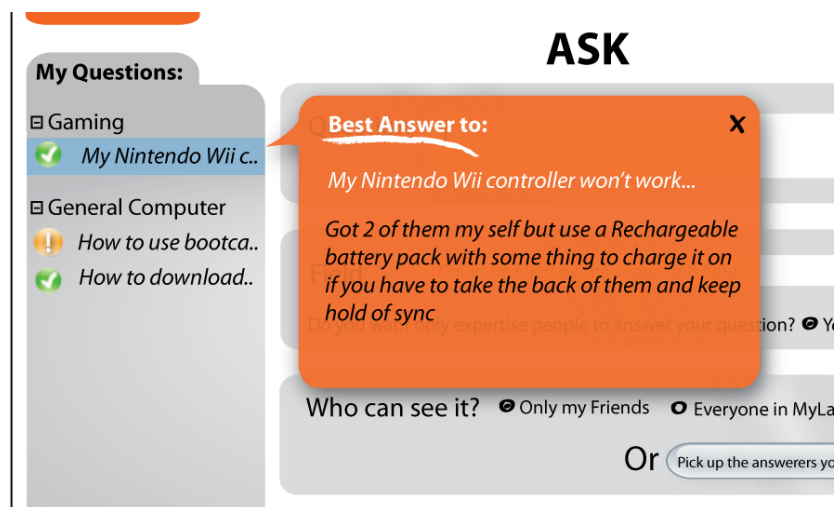


Figure 5.27: The “Best Answer” view

If the answer to a question is chosen as the best answer, points will be added to user’s profile immediately (the subject who has answered the question which was picked as the best answer). A best answer symbol will appear next to this question to indicate this fact and the answerer will receive a short notification that his answer was chosen as the best answer (figure 5.28). He will also be given the chance to create a wiki article from his answer that has been chosen as the best answer (see section 5.8.3, for further details on this matter)

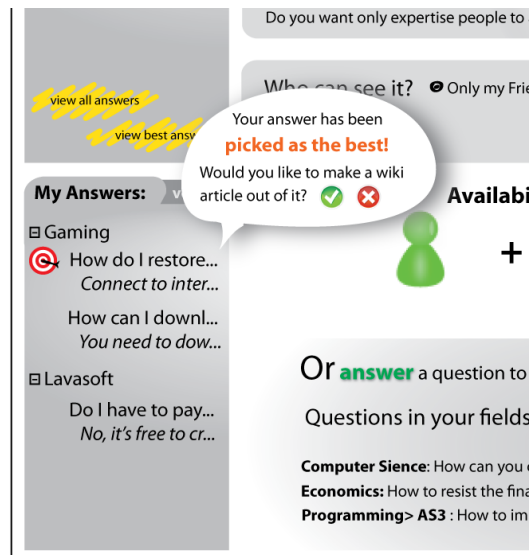


Figure 5.28: The offer to make a wiki article from a picked answer

As explained earlier (page 80), if the subject is in his main profile page while he receives any notification in his 'Asker' application, a general notification symbol will appear next to the 'Asker' application icon and the user needs to enter the 'Asker' application to view the details of this notification. This is another example of using the 'Extras on-demand' technique in the interface design (Tidwell, 2005).

5.8.1. Pointing system for the 'Asker' application

To encourage users to answer the posted questions and also for them to participate in voting on the best answer for a question that has "undecided" set as its status, it is better to have a pointing system for the 'Asker' application. What comes below is a proposal for a well structured pointing system that would cover both the "answering" and "voting" scenarios:

To begin with, it is good to clarify the different between normal points and points obtained through the Asker application. Normal points would only be used for the general rewarding system that is introduced in section 5.4 while points gained through the Asker application would be used specifically in the rewarding for this application (e.g. the top experts in section 5.8.2).

We need to have a measurement unit for the points obtained through the 'Asker' application so that they are not confused with the general user points that are obtained through various user activities within the community. I would refer to the points obtained through the 'Asker' application as "Points of Expertise" and will abbreviate it as PE from this point on. I need to emphasis that the PE points will be added to the general points in the user's profile and will only be considered as a separate entity within the 'Asker' gadget in order to identify experts in fields for answering questions.

However the Points of Expertise and normal points should not be totally mutually exclusive. Maybe some users would want to achieve the general reward (labels within the community 5.4) they are aiming for by answering questions. To cover this scenario as well, each PE could be worth 3 normal points. This is to value the sharing of knowledge between users and show them the most useful act within the community is to help others get answers for their questions.

In the coming section, I will divide the proposed pointing system to two parts: PE for questions & PE for the voting on a question. This will make it easier to track the pointing structure and compare the values between the types of actions user take and their relevant points received.

PE table for answering a question:

The following table summarized a proposal that could be used for rewarding answers to any given question:

Action	PE
1. Answering a question within the subject's set field of expertise	+3
2. Answering a question within a field that is not set to the subject's field of expertise	+5
3. Having an answer chosen as the best answer	+10
4. Asking a question that is viewed by others	+2
5. Asking a question that is added to the watch list	+2

Table 5.4: Rewards for answers

Some notes about the above pointing table:

In point 2 of the table, we can see that I have decided to consider allocating more PE for answers that have been given to a question that has a different field of expertise that is set for the one who is answering it (e.g. answering a question in the field of Design by someone who does not have this field set to his expertise). This is to encourage users to not limit themselves and always think outside the box. If a user gains 12 PE in a field that he has not set as his expertise, the system should congratulate him and give him an offer of adding that expertise to his profile.

In contrast, if the user receives -12 PE in a specific field (loosing points through thumbs down as in table 5.5), the system should notify him and not allow him to answer questions in that field for a set period of time. The latter proposal is to make the 'Asker' application a more trustful resource for members to find their answers and avoid unqualified people from giving answers that have a high chance of being wrong.

Point 4 and 5 refer to the case in which other members of the community click the asked question by a member for viewing through the smart text detection system explained in page 70 or add it to their watch list (section 5.10.1) to get updated about the latest answers and votes for it.

The reason for considering allocating PE for this type of questions is that it is an indication that the question asker has pointed to an important case that others also have problems with and hence opened a topic that could help many others.

PE table for votes on a question:

Action	PE
1. Voting positive/negative on an answer	+1
2. Receiving a Positive vote (thumbs up) for your answer	+3
3. Receiving a Negative vote (thumbs down) for your answer	-3
4. Having the "No best answer" button pressed for the question your answer is a part of	-5
5. Having the "No best answer" button pressed for the question you have voted for an answer	-1
6. Getting a Spam report on your answer	-10

Table 5.5: Rewards for votes

Some notes about the above pointing table:

Point 1: As it can be seen from the table, any vote for an answer would give the voter 1 PE. Since it is not possible to program the system in a way that could determine if a vote is correct or not and one should only depend on members' honest opinions, all votes (whether thumbs up or down) will be treated the same and gain only positive PE

Point 4: the rationale behind this decision is to encourage the answerers who answered a question to go back and review their answers and put more effort on it to make it a more accurate answer

5.8.1.1. What's next for the PE SYSTEM?

For this proposed rewarding system, some more considerations can be added for the future. One good approach could be to add levels based on the PE's gained, and doubling the gained PE's by the user's level number to make the pointing system for the 'Asker' application fairer.

There also could be a limitation put for the allowed users who could vote on answers based on levels. (E.g. only users who have reached a certain level might be able to vote for answers). In this manner, the accuracy of the votes will be increased. A similar system has been implemented in Yahoo! Answers.

One more possibility to be considered for improving the current proposed pointing system for the 'Asker' application would be to consider allowing more points for the users who are among the first who vote on an answer. Based on a research (Sausser, www), the people who first discover content that subsequently receives heavy voting/tagging are classified as trendsetters. On the other hand, followers find useful information and vote for it later on because it has already gained popularity.

5.8.2. 'Top Experts' and 'Where you stand between your friends' sections

When the user opens the 'Asker' application, he will be presented with a list of top experts for the 'Asker' system (Figure 5.25). These experts are the ones who have the highest PE within the community. The purpose of having this list is to encourage user contribution within the community and also praising the active answerers by making them appear in the top lists. This design suggestion will help in resolving problems o, i(ix), c(v), l, iii, p(vi), m (ii), k, j and xi in section 4.4 in part or full.

This list could be dynamic and change content as the user starts typing a field for his question. What this means is that, if the user has not started asking any specific questions, the list will contain the top expert people without any filtering. But as the user starts selecting a field for his question, the list changes to show only those top experts in that specific field(s). This feature is considered so that it could help the user choose the current top experts in the community to answer his question by selecting and dragging the experts from the top expert list into the "Who can see it" box for the question to add them to the people who would see their question.

In addition to the Top Experts Column, there is a "Where you stand between your friends" section at the bottom of the 'Asker' page, which represents the ranking of the user in the 'Asker' application within his (her) network of friends. The numbers above each person's image is the number PE gained within the 'Asker' application by taking part in activities like answering a question, voting for a question and etc. The number below the image is the current position the user has gained among his friends by winning points through the 'Asker' application.

The main purpose here again is to use the power of competitiveness feelings in humans and have it as a tool for encouraging active participation in the 'Asker' application. The inspiration for this part came from an application in Facebook called "Texas Hold'Em Poker" (http://apps.facebook.com/texas_holdem/) which has the same structure for ranking a user's position among his other friends who are playing poker.

5.8.3. Integrating visualization to 'Asker'

The today's snapshot visualization explained in section 5.6.1 can be a good addition to the 'Asker' application to make some questions more apparent and enhance the answering speed. If this visualization would be used in the 'Asker' application, the following parameters could be considered for it:

- Unanswered Questions view: the questions that have not received any answer yet could be shown in this visualization with the older questions (the longer awaited) appearing bigger and bolder in the visualization field.
- Best Answers view: the answers that have received the most positive votes and been picked up as the best answer, would be presented in the visualization system to encourage users who have taken part in answering others' questions.
- Field view: The fields that has been most picked up by users for their questions can be another parameter which would help the members and the company to know of the most problematic or question arising fields within the community

5.8.4. Taking Part In The Fun (TPIF):

User interests and personalities are not the same and hence what they might expect from an application varies a lot. The last part of the 'Asker' application is a proposal for a different approach for the rewarding system in the 'Asker' application. For those members who are interested in a more game-like activity while using the 'Asker' application, the system should have something to offer.

To encourage more user involvement in answering questions and helping each other out, I introduced an "achievement-based" system for answering questions and voting for other users' answers. The proposed system can also be used by Lavasoft to promote a specific user behavior within the community. Examples include:

- Encouraging users to answer questions regarding the problems other users have with using a specific product from Lavasoft
- Encouraging users to answer questions within a specific time interval (so that users get answers in a timely manner)
- Drawing user attention to a specific section within a software to gather more data and user opinions around it

The concept of promoting specific user-behavior through achievements is not new; this strategy has already been used in game-designs practices (e.g. Team Fortress 2 achievements [www]).

In the coming section, I will propose a sample achievement based answering system that could be used by any online community as an encouragement tool for enhanced answering speeds within the community:

The proposed TPIF system could be launched by pressing the relevant button at the bottom of the Asker page (Figure 5.25). Once in the system, the user will be presented with a set of pre-defined achievements that he could gain and have reflected in his profile. The ways to gain an achievement can vary from answering a specific number of questions, answering a question in a specific field, answering a question within a set time interval or a combination of them. Each achievement has a label that the member will gain if he succeeds in accomplishing it. The labels should somehow relate to the activity being performed to give it more meaning. Users will gain achievements in 3 dimensions:

- Achievement Labels
- Achievements Levels
- Achievement Points

Achievement Labels: These are the labels users gain when they accomplish the tasks set for a specific achievement. The proposed labels used for the current TPIF include:

- . **Celerity Master:** achieved after answering a posted question within 5 minutes
- . **Life Savor:** achieved after answering a question that has not received an answer for a month
- . **Ideal Observer:** achieved after voting for an answer that has received its answer in the last 5 minutes

- . **Ad Aware Doctor.** achieved after answering 5 questions other users have regarding Ad Aware (Lavasoft's major product)
- . **Trade Master.** Achieved after answering 5 questions regarding how to purchase a product from the company
- . **Spyware Fighter.** achieved after answering 5 questions regarding removing Spyware from an infected computer
- . **Field Master.** achieved after answering 20 questions within the user's selected field(s) of expertise
- . **Jack-of-all-trades.** achieved after answering 4 questions within a field not set to the user's expertise (according to the explanation of the system behavior in section 5.8.1, the user here will get an offer to add that field to his expertise)
- . **Field Combater.** achieved after answering 4 questions in a field not set to the user's expertise, but the member's friend has it set as his expertise

Notes:

- All the above mentioned labels that have answering to a specific number of questions in their description, apply only if the posted answers receive more positive votes than negative votes. This decision is for making the competition more meaningful and fair.
- The description of how to achieve an individual label could be presented by hovering over an achievement medallion through a tooltip.
- In order to have a way of representing these labels in the user's profile and also as an encouraging act, the achieved labels will be presented to the users by a medallion symbol. The medallions will be saved to user's profile as they complete 100% of the tasks required for each individual achievement (Figure 5.13).

Achievement Levels: These are the masteries obtained after gaining a set of inter-related labels (labels that relate to each other in one way or another like 'Ad Aware Doctor' and 'Spyware Fighter' since both aim at encouraging community members to help the company customers in resolving their security issues). The proposed masteries for the tested system are:

- . **Time Mastery:** obtained after gaining "Celerity Master", "Life Savor" and "Ideal Observer" labels
- . **Lavasoft Mastery:** obtained after gaining "Ad Aware Doctor", "Trade Master" and "Spyware Fighter" labels
- . **Space Mastery:** obtained after gaining "Field Master", "Jack-of-all-Trades" and "Field Combater" labels

To differentiate the Masteries gained from the Labels gained in the user's profile, a separate bolder medallion could be given to the user when he gains a mastery (completes a level).

Achievement Points: Additional points will be rewarded to the user by gaining achievements. These points increase in the direction of the arrows shown in the Figure 5.29. Points gained will increase by 3 from left to right and top to bottom (see the numbers inside each label which indicate its allocated points). The points gained will be added up to the user's general points and presented in his profile.

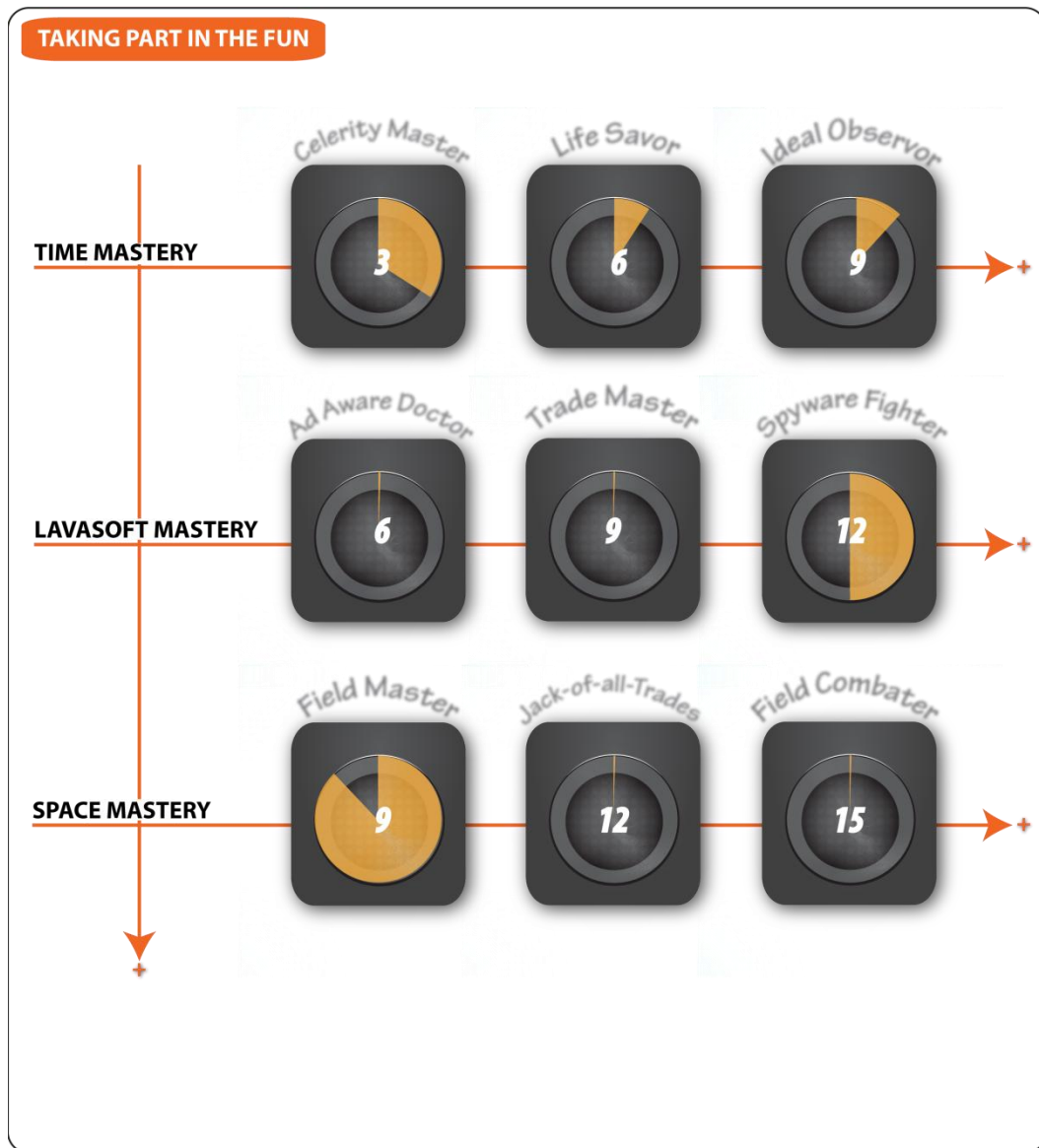


Figure 5.29: The “Taking Part in The Fun” design

After completing the requirements for a single label, the winner will be rewarded with a diploma in the name of the label achieved. This will then be presented in the user’s profile page under the Diplomas section. The same goes for the obtained Masteries (see Figure 5.13). As mentioned earlier, special medallions could be designed for each label or mastery to include in the user’s profile to bring in more user encouragements and profile attraction (if others visiting someone’s profile really like a medallion in that profile, they will be encouraged to take part in the same challenge to gain the medallion for their own profile).

To ensure user privacy and acting based on user discretion, before publishing the gained diploma to the user’s profile when they have been obtained, the user should be able to choose whether or not he wants this information to be reflected in his profile.

5.8.5. How will the ‘Asker’ application look for others?

If a subject’s friend has enough permission set by the subject, he can visit the subject’s ‘Asker’ page to review the happenings within his friend’s ‘Asker’ page. Since users of the community should not be able to ask a question within other user’s profiles, hence going to the Asker gadget from someone else’s profile should bring about a different interface and available options presented to the viewer.

If the question asking section of the subject's page would be removed for viewing by others, here is what will remain to be presented to the viewer:

A list of the subject's asked questions (the viewer can click on any of them to view either all the answers or its best answer). There is an extra button here for them to answer the question if they want.

- The questions the subject has answered
- The questions the subject has voted for
- The "where you stand between your friends" section
- A list of top experts within the subject's network

Individual permissions can be set for each of the above-mentioned parts, to enable the user to have more control over his privacy (e.g. they can select to only show the first 3 parts to the viewer and hide the last 2 parts from them). A visibility toggle button is used in the user's 'Asker' application page for this purpose as shown in Figure 5.35. Below is a preview of how the page will look like for others if all the permissions are set to allowed:

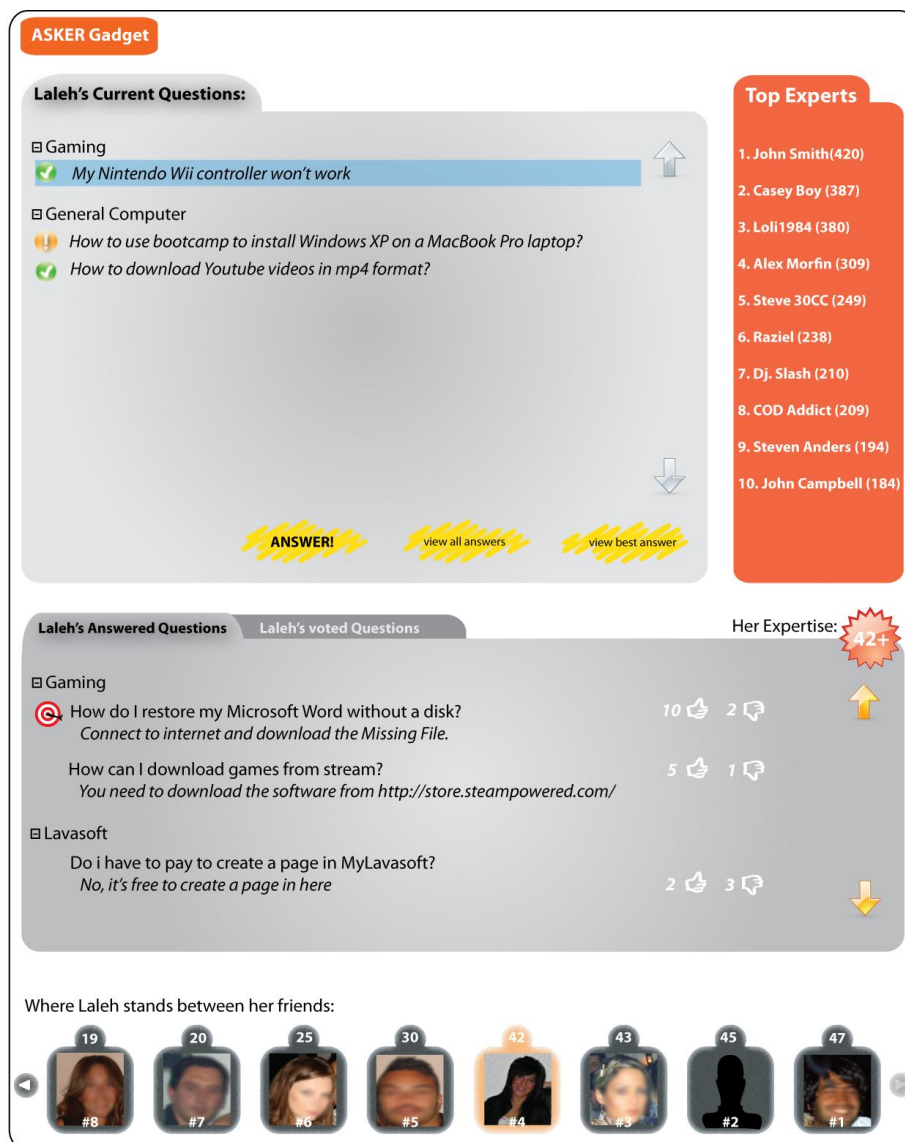


Figure 5.30: The Asker page as seen by others

In the top section, the subject's asked questions are listed from the one that has the least number of answers to the one that has the most. This is to help the user get answers for the questions that still are not answered. Considering the status of each question (see page 73 for question statuses), the sorting will be as follows:

1. Open
2. Undecided
3. Resolved
4. Closed

It is worth noting that questions within the same group will still stay in their groups regardless of their status or number of received answers. But they will be sorted within their groups according to the above criteria. This is to help having a better organization of questions and enhanced understanding of them for the viewer.

At the bottom of the page, the questions that a subject has answered will be presented. These answered questions will be listed from questions that have received the most positive votes for an answer to the ones that have received the least positive votes. This design decision will support the idea of presenting more valuable and trustable data to the viewer first instead of the least trusted data. Same concept will be applicable for the voted questions list.

5.8.6. Collaborating the 'Asker' application with a Wiki

(solves problems o , $q(xiii)$, $c(v)$, n, j , xii , g , vii , xi & $viii$)

Since one of the requested applications in the surveys (section 6.3) was a wiki (cooperatively authored online encyclopedia) system, it came to my attention that collaborating the 'Asker' application with a wiki would be a smart way to enhance the concept of using a wiki in MyLavasoftware. Although a separate wiki application should be integrated for the community, the integration of the wiki itself will not be a focus in this report. The reason for this is that the concept of using wikis in general is simple enough and does not need a detailed explanation of integration description:

Ward Cunningham launched the first wiki in 1995 on the premise that publicly editable web-spaces are a promising way to achieve fast, productive online collaboration (Leuf, Cunningham, 2001). The proposed wiki system for MyLavasoftware would originally work in the same way as all other wikis online; meaning that users will be able to create a topic to write about, start writing the article and others can edit its content later on.

But how does the integration of the 'Asker' application and wiki article creation works?

Since good answers to question can be a topic that would interest a lot of users and help them learn more and resolve their problems as well, providing the chance for the user who has had his answer selected as the best answer would be an innovative way of encouraging wiki article creation and enhanced user-created knowledge base for any given online community.

For an answer to a question to become a wiki article, the person who has answered it originally needs to ask the question asker's permission to be able to make a wiki article out of his answer (is done by either accepting the offer the first time appears when an answer gets selected as the best or later on by pressing the "wiki it" button as shown in Figure 5.31). This phase is to make better bonds and trust levels between users and avoid offending the question asker by making a public article from the topic he has originally created.

If the question answerer gets the permission to create an article from his chosen answer (only the answer that is selected as the best answer becomes available for article creation), he then comes into the article-

writing page where he can modify the content of the answer he has given to the question to make it appropriate for an article (Figure 5.31).

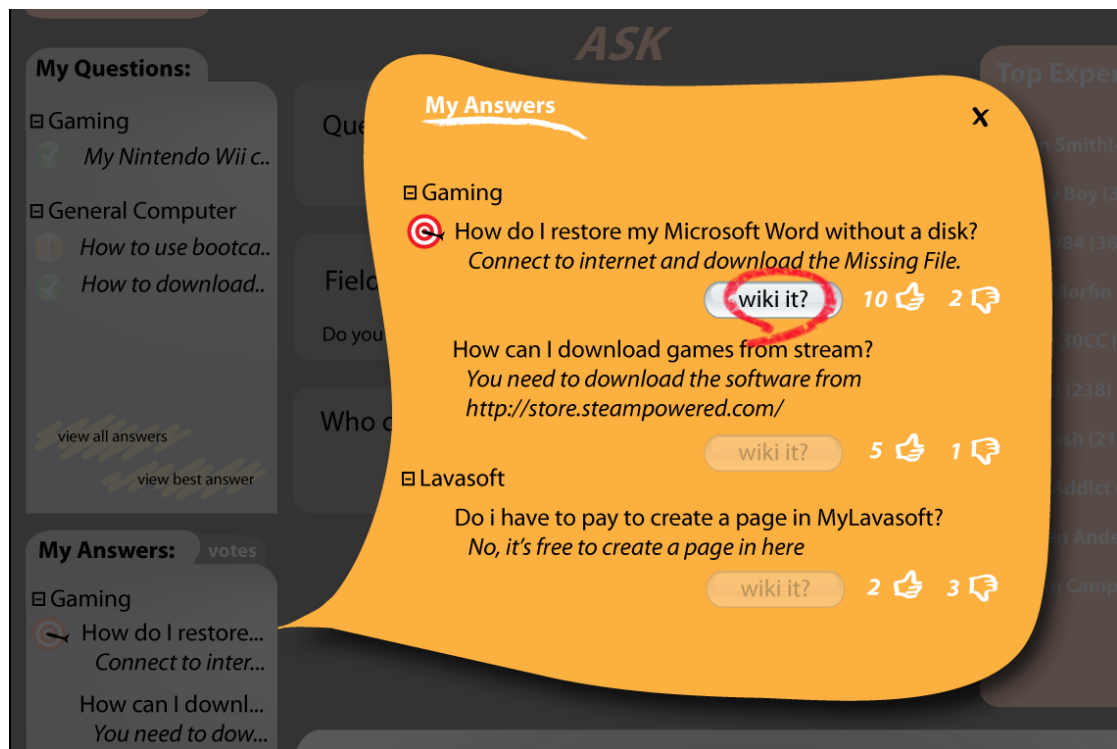


Figure 5.31: The button for creating a wiki article out of the “Best Answer”

In the above image, the grayed out “wiki it?” button means that the answer is not selected as the Best Answer yet and hence cannot be used for article creation

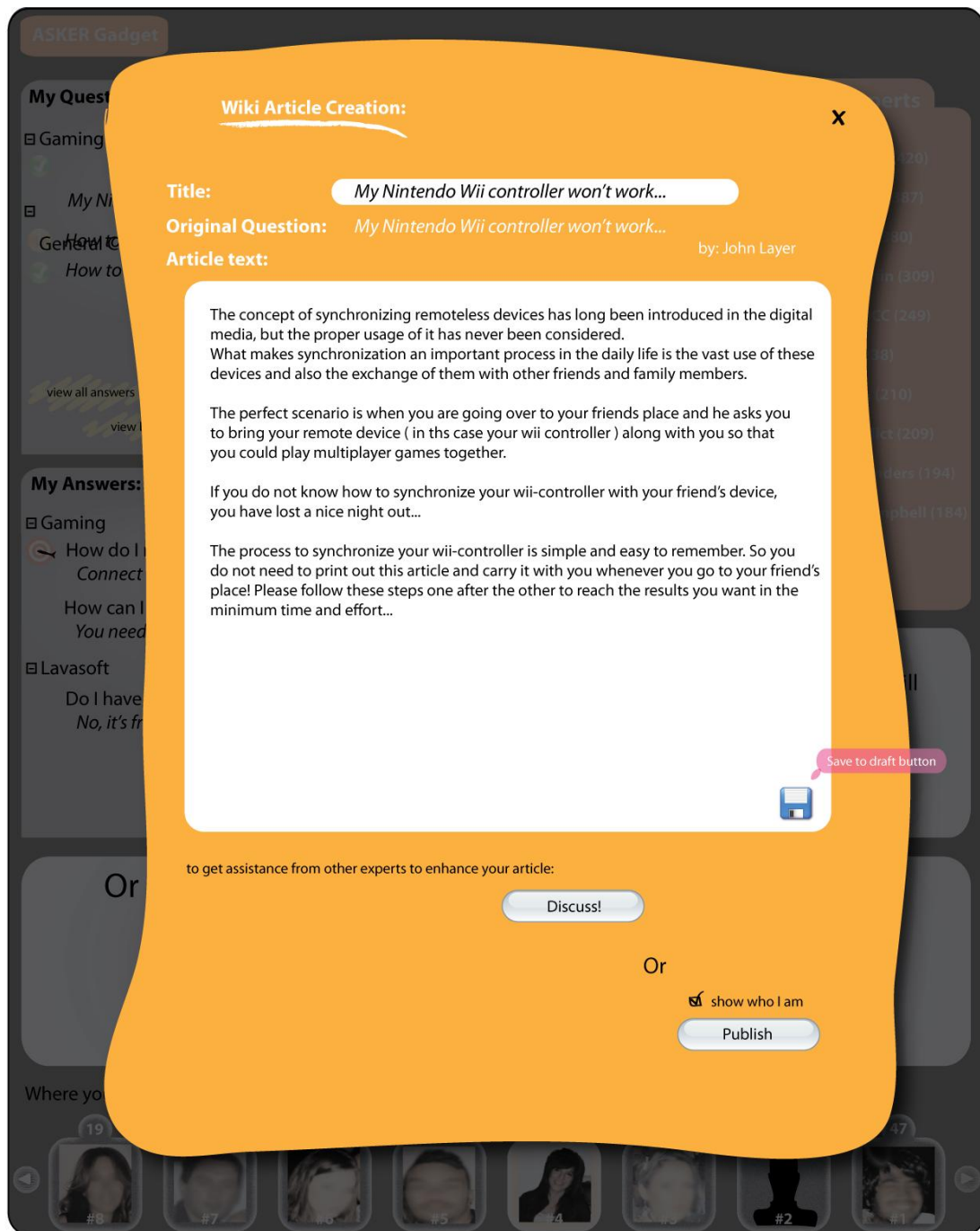


Figure 5.32: The wiki article creation page

After writing the content of the wiki article, the user can pressing the “Discuss” button in the wiki article creation page (Figure 5.32), which will bring up a discussion page with the friend-finder gadget right at hand, so that the user will have the possibility of choosing the right people for the discussion (filters for people with the right expertise in the question field will be preset in the friend-finder application). In this stage, the user will have the possibility of discussing the article he has written with other members of the network to complete the wiki article and publish it. The selected users should have the same expertise as is set for the originally posted question to ensure the accuracy of the content being created. This step is to enable a collaborative attempt in article writing and hence enhance the practice of article creation and eventually content stability.

If the question answerer feels like the person who has originally posted the question has set the wrong field for it, he can contact him and ask him to change it to the field he feels is the right one.

The discussion page shown in Figure 5.33 demonstrates how a panel to discuss the written article in the right hand side while reading the actual article in the left side will bring the ability for the users to talk about the current article through chat bubbles, modify and submit their ideas and discussions. The toolset at the bottom of the article text is to be used to write (pen tool), highlight (highlighter tool) (useful for discussion referencing) or submit (save tool) the changes you have made to the current text for others to see.



Figure 5.33: The Discussion page for the wiki article

The discussion step is however optional and the user can skip it and press the “Publish” button directly or “save as draft” if he wants to work on it later on (Figure 5.32).



Figure 5.34: Discussion Stamp

Since discussing an article before publishing it adds a great value to it, users need to get encouraged to do so before publishing their articles. Hence a special discussion stamp (Figure 5.34) is used to mark the articles that have passed the discussion phase to make them stand out among other un-discussed articles. They should also appear at the top of the list of searched articles.

The concept of discussing an article before publishing it has been used in Wikipedia and the discussion page is referred to as “talk” page. According to the findings from a survey performed on Wikipedia (Engeström, 1999), “discussion pages allow community members to confer about certain aspects of articles, whether it be an issue about including certain information, working toward a neutral point of view, asking for clarification, or simply requesting that someone with more knowledge about a particular aspect of the subject to add to it”.

The newly created wiki article can have a new title and content, but the original question that led to the creation of the article and also the name of the person asking it (if allowed by the user) will be posted in the header of it for user reference. The article creators can decide themselves if they want their identity to be published as the authors of the article or whether they would prefer to remain anonymous.

While the article is created, it will be available for others to see and even edit it.

A useful feature for the wiki in this case would be to keep ghost copies of the articles for a certain period of time for members’ reference. The ghost copies will be created as soon as an edit occurs on the article by a community member and contains the previous rigors that happened on the current article. In this way, other users will be able to see the history of what has happened to the article they are interested in and how it came to the point it is at right now.

The voting system can again be used here to enable user voting (either positive or negative) on the wiki article and its ghost copies; meaning that members can give thumbs up/down to the current article or one of its ghost versions. When a ghost article gets a positive vote, it becomes a bit clearer and gains opacity. The article with the most positive votes in a group will become the main Wiki article and others will be faded as ghost articles sorted according to the number of the positive votes they received. Each article can have a maximum of three ghost articles to avoid information cluttering.

5.8.7. Company Benefits from the ‘Asker’ application

Since the company benefits have not been referred to in detail throughout the description of the ‘Asker’ application (more user-side goals and benefits have been pointed out), I will bring a brief list of the possible benefits the business organization who would implement such an application into their online community system would receive:

- By having the PE system that is described in the ‘Asker’ application, it would become easy for the company to target the users who are active and beneficial for the company and provide them with special promotions and offers
- The discussions around a questions and the given answers to it (through the “comment” feature), can provide valuable input for the company to gain an insight of the user feelings, problems, needs and etc.

- The technical support team in the company can refer their customers to expert users who are good in answering questions to receive more help in a specific field
- The most commonly asked questions can be shown through a simple query and the company could easily realize what is the most common problem users have
- The wiki can be used as a knowledge base for the company to refer to
- If there is a misunderstanding between users regarding a product, feature, service or activity a company is providing, it can be easily targeted and clarified through looking into the most commonly asked questions and their themes

5.9. Transformation of participation

(solves problems o, c(v), l, x, iii, b(iv), n, xii & xi)

As it is presented in a paper by Susan Bryant, Andrea Forte and Amy Bruckman (1999), user participation changes from the time a subject starts being a member in an online community compared to when he becomes a longtime member. In the mentioned paper, the participation was changing in Wikipedia from being a “novice article editor” to a “Wikipedian”. This change determined to be motivated by the member’s increased engagement in the community over time. This transformation of participation is fundamentally linked to their individual goals, motivation and perception of self (self-perceived identities). In this research, what novice users were identified to mostly work with was the “Edit This Page” tool. They used this tool to correct the minor mistakes they found in wiki articles they encountered. The “Wikipedians” on the other hand, had a high percentage of usage of the “Talk” pages, which they facilitated to discuss over an article with other Wikipedia members. Unfortunately, Wikipedia does not provide any enhancement for its subjects alongside their activity transformation. Both “Novice” and “Wikipedian” users have the same set of tools with the same arrangement in their user-page.

There has been a design proposal to be used by MyLavasoftware in an earlier section of this report (section x), which I called ‘incremental profile design’. This refers to a system design that would reveal more toolsets to the community members as they advance in their membership within the community. But what happens if the member does not merely changes his activity level within his role and starts performing activities that mostly relate to another role? What MyLavasoftware would need to provide its members (subjects) with in situations like this is a dynamic system that would monitor members’ activities silently and offer respective solutions when a big change in activity direction gets detected. In this way, the member will be reminded about the change that is happening in his identity within the community and would encourage him to go with the flow.

A simple solution would be to make the system check the tools being used by a member within the community and notify the user about the change in direction if one is detected. Since the activities within MyLavasoftware are performed based on the roles members select, the target for this activity monitoring would be user roles and offering a change in the assigned roles if change is detected.

A sample scenario is when a subject chooses to be a Beta Tester as his main role, but after a while, the number of his suggestions and discussions around the GUI of the software is more than the number of technical bugs he reports. A smart thing for the system to do in this case is to remind him of this transformation of his participation and offer him to change his primary role to Designer/User experience and have the Beta Tester as his secondary role. What could help here even more is to provide him with a preview of how his profile will look like if he chooses the suggested role as his main role (presenting him with the toolset he will have at hand like a screenshot grabber and editor for capturing the screen, so he could submit his GUI fix/improvement suggestions faster and easier). This way, the user is not forced to go with the transformation, but is simply reminded of his recent behaviors and an offer to take better

advantage of what the system can provide him so that he could improve his activity quality. Of course, subjects can always detect the change in the orientation of activities they perform within the community themselves, so they need to be able to change their roles manually whenever they want throughout the lifetime of their online community membership.

Another perspective here is when the user goals do not change, but expand. This is when users still perform the same activities, but in a broader sense and higher intensity. We could use Beta Testers here again as a sample since their behavior is studied throughout this project and is familiar: During the Beta Periods, some testers are more visible within the community because of their high percentage of activities: the number of reports they have, the answers they provide other members with, their votes on other reported issues and etc. These are not normal beta testers any more. They are deeply involved in the testing of the software and can detect any change in the wrong direction quickly. Their work is of great value for the company and they are aware of this fact. Of course what they would like to receive as a reward for their activity is better recognition. What MyLavasoftware could offer to these subjects in this transformation process is giving them some power in their role within the community. This power could be things like giving them administrative powers with the appropriate label within the scale of their activities.

5.10. Extra tools

In the coming section, some useful and important tools that the online community needs to have in order to meet the requirements mentioned by users and also the company itself will be described in brief.

5.10.1. Watcher

(solves system security problem in general and also problems $b(iv)$, $p(vi)$, n , $m(ii)$ & g)



In order to increase the security of the community at the same time as providing the user with a tool to get updated about the latest happenings in the fields the community member is interested in, a Watcher should be used. The watcher is a button that is placed throughout the community, and pressing it enabled the user to get notified about the latest happenings in a specific part of the community.

A scenario of use is the Watcher button in the Asker application: the user can add a watcher to a question he finds interesting and would like to follow. By pressing the eye button for that question, he can actively follow that specific question and know when someone answers, votes for an answer and etc. As described earlier, the use of this button is not limited to the Asker application and can be expanded to a wider context: e.g. following the news about a specific product, following a specific member's activity (it needs that member's explicit discretion), keeping an eye on the image uploaded, following a topic in a forum and etc. In this way, the user does not have to look through pages and high volume of information to get to the point he is interested in, and instead can have a quick shortcut to his section of interest and only check the information when something new is added or a change has occurred. This will particularly solve problems $m(ii)$ and g of Appendix E

One of the other biggest impacts the Watcher button has for MyLavasoftware will be the surveillance of members' contributions. Using this functionality, members can keep an eye on the publication and posts they make and any inappropriate edition/addition by others can be deleted. The same system is currently being used in Wikipedia and the objective is the same: reverting vandalism and addressing controversial changes within the community

5.10.2. Snapshot Saver

(solves problem g)



Any change brings the fear of losing what you had before the change has occurred. This is not limited to real-life situations, but also in the digital world as well. This is why the use of backing up operations is so emphasized in computer applications. But as far as I am aware of, this context has not been talked about or implemented for online communities. Here is when the idea of having a ‘snapshot saver’ tool for MyLavasoftware took shape: what this tool will do is saving the current state of the user’s profile page in memory and allowing the user to revert back to it later on. This feature is currently being used in Virtual Machine software like Vmware or the Time Machine in Macintosh to save different states of the system for future referencing. Since online web applications are becoming closer and closer in functionality to desktop software, adding some of those features used in desktop applications to web-top interfaces would seem logical.

Here is how this tool could work for MyLavasoftware: If the user presses this button, his current state; like profile information, joined groups, applications added and etc, will be saved with a name (s)he chooses to give it. He should be able to save more than one state for his profile. Reverting back to a state can be done by creating a revert button. The benefit this function will have for the members is the fact that they will not be scared to try out new things, add new applications or join groups of interests whenever they want since they know that they always will have a way back.

5.10.3. Visibility toggle

(solves problems e, a & n)



In online communities, there are situations in which users in one hand might not want parts of their profile or user pages to be seen by all or parts of their community friends and on the other hand, this decision can change when users start communicating more with their friends and trust is built between them. As a result, users should be able to set individual permissions for various parts of their profile page to allow or forbid others to see that part of their profile. They also need to be able to change this permission quickly and easily later on when they decide to.

A visibility toggle button can be used to enable the user to toggle between visible and invisible states for each section within his profile.

Pressing this button should bring up the Friender gadget, letting the user to choose which friend lists or individuals within his network of friends he wants affected by the press of this button (the Friender in this context should have a “Select all Friends” button in case the user wants this permission change to apply to all his friends).

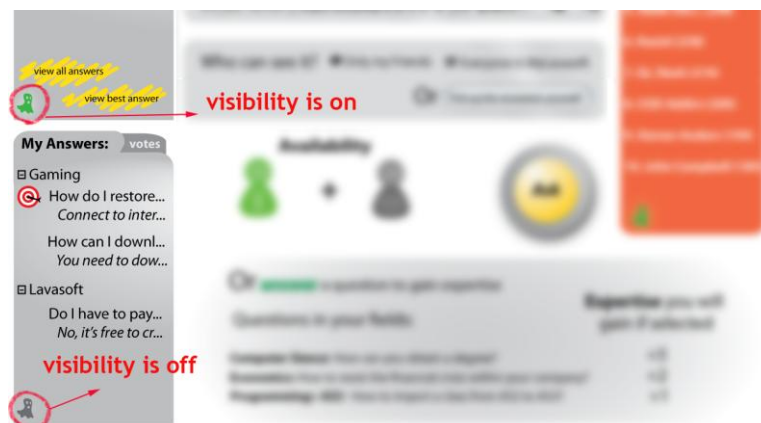


Figure 5.35: The visibility toggle in action

5.10.4. Company News

(solves problems vii, viii & iii)

This tool will be extremely useful for the users to get the latest updates regarding the company. But since not all news topics are interesting for everyone, it would be advisable to track the user roles and send custom news based on those roles to users. E.g. Beta testers would only receive news that relate to Beta testing the software or upcoming project plans that need Beta testing by them

In this way, users get information about what they need to know and do not get un-interested by reading news that does not relate to them. Of course, general news can still be presented to the users, but by user-discretion only (they can have a button that would say: “read all the news”).

5.10.5. Note Taker

(solves problems $b(iv)$, n & j)

Note taker is another useful tool that could come handy for various user groups. This tool could support a simple note writing/pasting facility with the possibility of adding different pages for different types of notes. This tool should only appear as a small side-gadget pop up and not cover the entire community’s interface in order to allow for reading and taking notes as you read.

5.10.6. Creativity Gadget

(solves problems d , $i(ix)$, j , n , o , $c(v)$, xi , xii & vii)

In order to encourage user creativity and allow subjects to be a part of what they really want to be, and also to let users share their innovations with the company if they would like to, it is important to provide them with the right tools and enhancements within the community. A suggestion in this regard is the addition of a creativity gadget that everyone should have in his or her profile as a secondary gadget.

This tool would provide a step-by-step goal creation wizard in which, users create their own desired goal, and set a time frame they predict would be manageable for them to reach this goal. They could be allowed to add teammates for their goal by selecting them through the Friender gadget and sending them an invitation for joining.

After doing so, they could start working on their goal and when the deadline arrives, select whether they were successful in reaching it or not (accomplished/ not accomplished option should be presented to the user when the deadline arrives). Setting a deadline for the project is an important step since it would encourage users to work actively on their selected projects and avoiding the system to end up with numerous unfinished projects. Since this deadline will be set by the user and not by the system, this would reduce the amount of pressure on user-side. If the subject selects the ‘accomplished’ option at the end of his project, their goal could be presented to the company employees and a proper reward would be arranged for them based on what they have achieved. Alongside the process, if they need a specific help from the company (e.g. their goal would be to create a competition for a specific group of users and they would need the company to upload the contest’s question for them to their website), they could use a “ask for company Help” button to get in contact with a company representative and submit their request.

If what they have achieved is not related to the company and is for personal benefits only (e.g. I will finish programming this gadget for my homework), the user can choose not to send his achieved goal to the company and only have it saved somewhere in his profile (the bag section could be a good suggestion to save to).

5.11. Profile Look and feel

(solves problems d & $c(v)$)

One thing that I initially planned to include in my project was targeting a 3D design for the community. The idea came to me after I studied the current social networks and realized the common design pattern in them: a flat interface without any 3D elements. Since one of the problems listed in the classification method that was performed earlier (section 4.4) was boring design (problem d), this decision and the requirement for further investigation on it became more important to me.

But I could not start off all my designs using a 3D setting before investigating further into this field. Hence I started looking into various resources for more information and the possibility of related works in this regards.

After doing some research in the field, I figured out that the idea of using a 3D design has not been implemented in any of the current well-known social networks. The question of whether to use a 2D or 3D environment might have been addressed for online social networks, but an implementation has not been considered for the widely used networks yet. However there have been some considerations of using such a decoration for the virtual space in projects like ExitReality (Riley, www).

For me, this question has been of great importance since designing for the target audience and tailoring MyLavasoftware according to their needs is both my and the company's highest intention. To find out whether or not a 3D design would fit the needs of the user groups of MyLavasoftware, the best way would be to create profile designs both in 2D and 3D and ask some online social community users to select a setup and say why they did that specific selection. Hence two groups of users were targeted to send out the design alternatives to:

- **Beta testers:** These are the groups of users who have been valued contributors to Lavasoftware and have been actively taking part in Beta testing various Lavasoftware products since long ago.
- **Normal Social Network Users (Facebook members):** These are people interested in communicating and keeping in touch with others through a social network. They might not have any special interest in the computer field as a whole and might only prefer to use a social networking tool to socialize and keep in touch with others.

Notes:

- The survey sent to the Beta Testers was a part of a bigger survey intended for general information gathering (Appendix B). The survey questions for the Look and Feel test are attached in Appendix E.
- In the look and feel questionnaire that was sent to the second group (Normal Social Network Users), there was no mention of MyLavasoftware as a social community to avoid confusing the participants and spending time on explaining the concept of what MyLavasoftware is. Instead, they were asked to think about the current social community they are a part of (Facebook) and decide which theme they would like to have in there.

The above selection was made based on the fact that the two selected groups would cover the target group of MyLavasoftware to a needed extent: One group represents the all-time MyLavasoftware users who are into using it as a tool to perform certain actions with specific technical goals; the other group is normal computer users who would look at MyLavasoftware merely as a place to socialize with others. These can be the extreme characters for MyLavasoftware and it can be concluded that the predicted members of MyLavasoftware fall between these two extreme ends (Djajadiningrat et al., 2000).

The plan for the look and feel test was as follows:

The users would be presented with 4 sets of different possible setups for their profile page in MyLavasoftware (or Facebook for the second target group). These sets would cover 4 scenarios of environmental setup for a profile page (Figure 5.36):

- Everything to be in 3D
- Having a 3D environment, but the tools to work with (e.g. gadgets, profile picture and etc.) would be in 2D
- Everything to be in 2D
- Having a 2D environment, but the tools to work with would be in 3D

The results of the survey were predicted to help in deciding on the perfect setup to base the design of the MyLavasoftware community on.

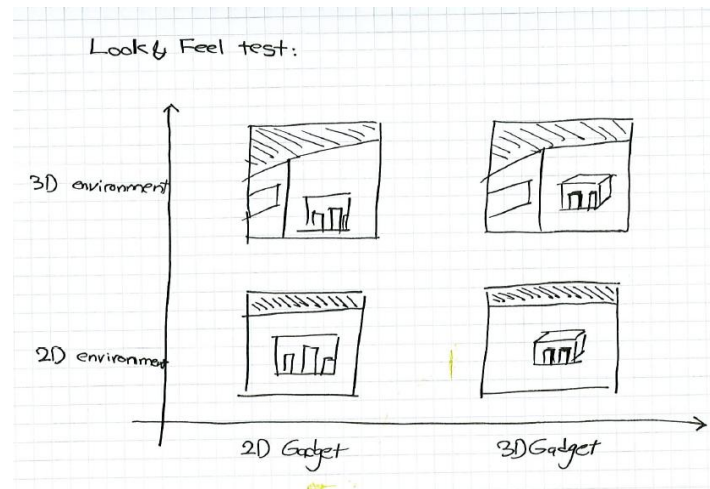


Figure 5.36: The 4 scenarios of environmental setup for profile theme evaluation

After the planning phase, the design work was started using 3Ds Max. The design was done in the theme of a wooden room. This choice was made with the hopes of bringing a feeling of comfort (warm wooden color) and spatial orientation (the concept of using a room as user profile). As it can be seen in Figure 5.37, a library is used as a placeholder for gadgets. Other elements in the room include a desk (the current work space), a small shelf (to hold the purchased products from the company) and a window to the outside world (exiting the user profile and going to the community where everyone else is).

All the four setups were implemented in the same room and made ready for inclusion in the online survey that was to be sent to the selected groups. Figure 5.37 demonstrates all the four mentioned setups put together.



Figure 5.37: The final created 2D and 3D profile scenarios for evaluation

The participants were free to decide what each element means (the shelf, the desk and etc.) and this was not explained to them to avoid limiting their vision. The project was compiled in flash and two navigation buttons were used to enable the participants to easily move back and forth between the 4 sets. Each set was given a name of an animal for easy referencing through the survey questions (Figure 5.38)

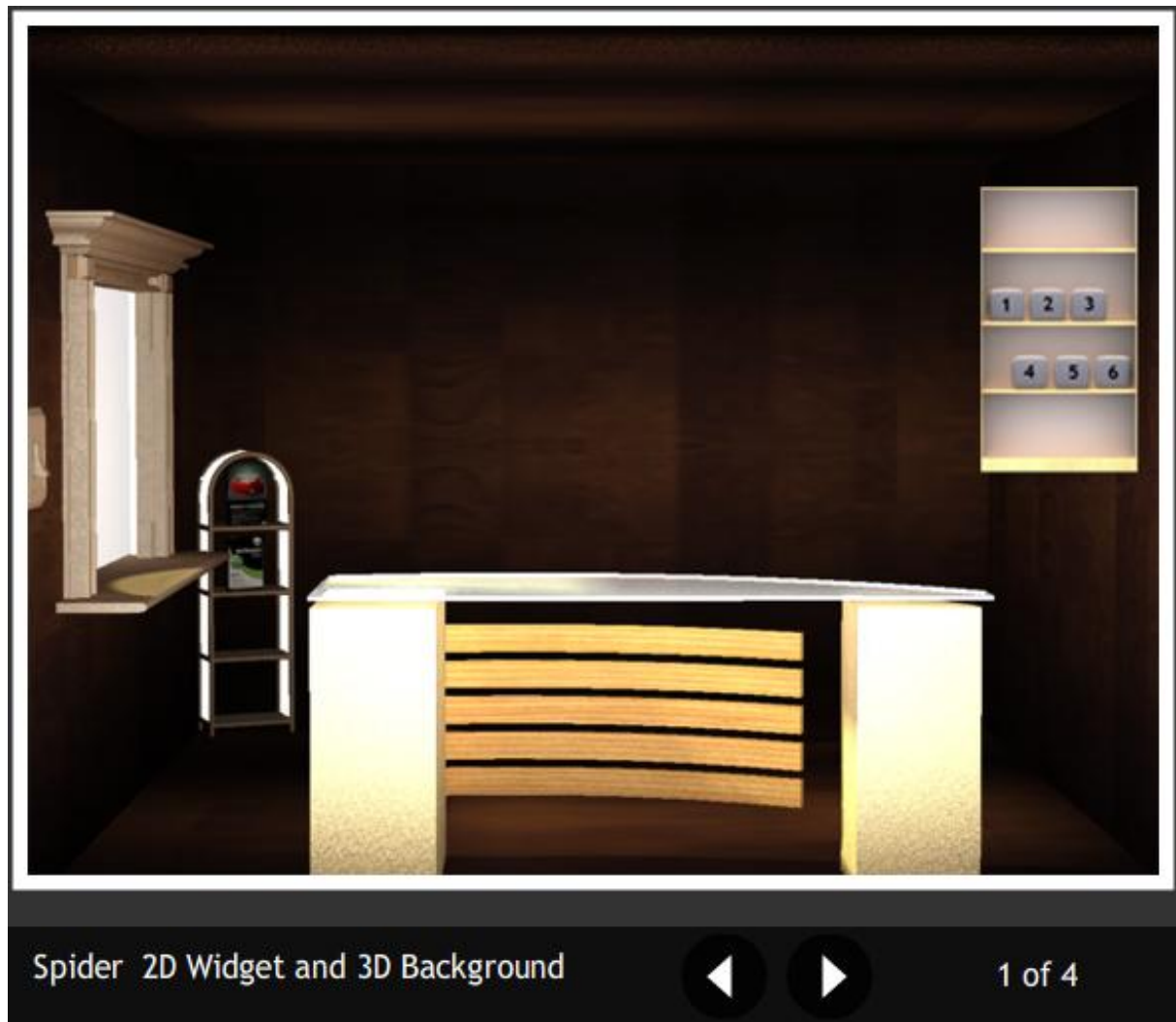


Figure 5.38: A snapshot of the flash gadget created for the evaluation test

To avoid response bias from happening as a result of showing the same image for all the participants in the beginning, the first uploaded image in the flash mockup was randomized. As a result of this randomization, the sets could not be named in sequenced numbers (e.g. image1, image2 and etc.), hence the sets were given animal names for easy referencing in the questionnaire. A short description of what the scene was referring to was written next to the name of the set (e.g. Cat: 2D widget & 2D background).

The final result of this survey indicated that user preferences are equally devoted to 2D and 3D designs. Meaning that, the best approach in this context would be to provide the option for the user to choose between 2D and 3D profile designs and do not force the user to proceed with the choice that the system creators have made for the users. The result of this survey can be seen in details in section 6.3.1. Look & Feel Evaluation result.

Strategy Switching

One thing that should be mentioned at this phase is a strategy switching that occurred during the look and feel test process. The plan for the design phase was to have all the mockups for the community design in 3D if the survey results were positive towards that.

As it can be seen from the results summarized in section 6.3.1, the complete 3D solution was as desirable as a complete 2D solution. This would imply that I could implement the design mockups in the previous

stages (e.g. the role-based profile design, the Friender Gadget, the Asker Gadget) in complete 3D using 3Ds Max, but after creating the four mockups in this section and realizing the time needed to do so, I came to the realization that a complete 3D design would take most of the time that could be spent on other parts of the design concept instead and the value it would actually add to this project would be less than if more work was done on the community design as a whole instead.

As a result of this conclusion, I decided to continue performing the concept design in 2D, and leave this section as an input for future work.

5.12 Community Terms

One of the important decisions for any community creation is the consideration for naming of various parts and components within the community. Some systems decide to use normal and well-known terms like inbox, messages, forum and etc. for the various components or activity types within their created community, while others like Twitter take a more creative approach and decide to build their own community terms.

Twitter is an online community that uses only short status messages called “Tweets” for user communications. The popularity this social community has gained in this regards and the distinctive terms used by it that gained fame so quickly, made me to think of considering and proposing the same approach: using a specific and unique set of terms that would make the community stand out between other currently available online social spaces.

It should be noted that both approaches (using well-known terms or having a special term-set for the community that would be unique) have their own advantages and disadvantages. The most obvious advantage of using the well-known community terms is the familiarity of the users with them and avoiding user confusion, while the advantage of using unique terms lies in the special identity it would give the community: Twits are well-known terms for Twitter nowadays and if anyone mentions he is twitting online, most people would know what he means.

Based on the above argument, I decided to consider the addition of special terms for the MyLavasoftware components: e.g. Friender for the friend making tool, Asker for the question asking and answering application and etc. But I left the decision of using special terms for other parts of the community to the community creators by providing them with alternative possible terms through a questionnaire that was sent to all the company employees in which they were asked to come up with their own creative ideas for terms to be used in various parts of the community. These terms have been merely listed in section 6.3.4 and the selection of the best term to be chosen for MyLavasoftware is not done by me and is left as a part of the future work.

6. Result

This section provides an overview of the final system designed through this project work. The achievements are listed as capitals for the system and finally the general design guidelines that could be used by any similar system are summarized.

6.1. Final System

What has been achieved in this project work is a design proposal for the creation of a social community system that would enable the target group of a company to more openly interact with each other while their needs and requirements become visible to the company and also for the subjects to be acting as contributors to the system instead of remaining merely as users of it. The chosen way to proceed with in order to achieve this goal was to enable the users to act based upon their skills (role-based profile design) and their experience of use of the system (incremental profile design) and make it possible for the company to get an overview of the user needs and interests by including easy-to-use and understand statistical visualizations (the information visualization gadgets) and navigation techniques within the network of people (the Friender gadget). A well-structured question asking and answering system was also another useful add-on to the system that aims at member-to-member collaborative support. The addition of some other community tools like the creativity gadget, the whiteboard and etc. to promote user innovation within the community has also been put into consideration.

At the same time as providing the above-mentioned facilities and perspectives of community use, providing a design that would be in a way that helps the created community to iterate in its maturity phase and support high degree of user activities within the system has been put in focus. Rewarding users for their contributions, and taking out the boredom from some routine activities performed in communities and instead enabling the users to do the same task in a more fun way in applications like 'Asker' are examples of this accomplishments.

One of the other points of focus in this project was to reduce the amount of 'man hour' spent on the community by the company staff as much as possible. This goal was achieved through the addition (or consideration of addition) of automated systems in which a counter would be used to automatically track a certain behavior or situation. Examples of this could be seen in the counter for the spam reporting system in page 74, the pointing system in part 5.8.1, the member life counter in page 45, the activity and performance counter in section 5.3, the transformation of participation in section 5.9 and the counter for the friendship system in section 5.7.5. All the samples of use of a counting mechanism in these design proposals are an attempt to provide a system that can be self-maintained without the constant need for human supervision.

However, the implementation of the above mentioned counter systems is not the only innovation that would help in this matter; the visualization techniques used in the visualization gadgets (section 5.6.1) and the Friender application (section 5.7), could also be considered as another addition to the system that would reduce the man hour spent on the community: by being able to have an overview of the various parts of the system through a visual statistical representation, the time being spent to find what one might be looking for can be significantly reduced.

These results have been communicated to the reader of this report through static mockups created based on the explained design situation. It should be noted that these prototypes are a way to explore the design situation rather than being an actual working prototype. The actual functionality of the system has not been implemented and all the proposals in this work remain as design concepts that are to be considered for future implementations. The system sketch below provides an overview of how the finished system is structured and the problem domains each part of the system design is covering. Although this sketch provides the overall view of the way the intended system and its various parts should be, but it should be noted that this system structure has been created in iteration and was not something that was aimed for

from the very beginning of this project and before the actual implementation of the various parts of the system.

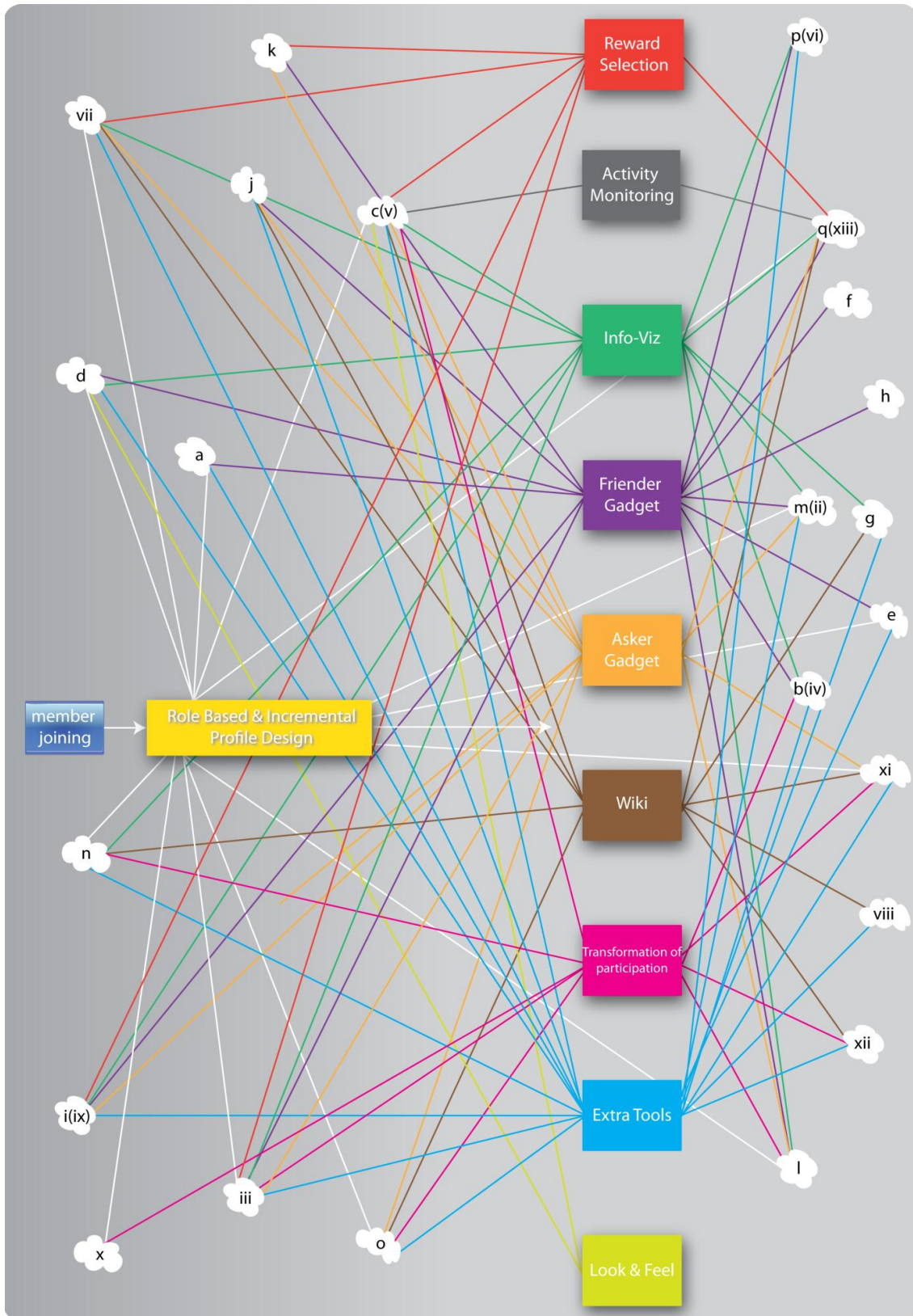


Figure 6.1: The resulting problem and solution relationships

Diagram legend:

e: no middle level privacy protection	x: hard for the company to converse with users based on who they are	g: entering new information has the risk of the old to get lost or forgotten
a: no control over what you want to save in your profile and what you want others to see	iii: hard for the company to send out information to the right people	k: it takes a long time to receive an answer for your question
f: lack/low level of trust for new-comers	i: company should look elsewhere to find user comments about its services	d: boring design
o: people are good in specific fields	b(iv): its hard for the user to follow up on what he is interested in	j: no good way to share knowledge and learn from others
i(ix): user activities do not receive expected appreciation	p(vi): It's not easy to get statistics in a quick and easy to understand way	xii: no tool to share user creativity with the company
h: it takes a long time for new comers to gain recognition	n: not having the right tool you need to work with right at hand	vii: lack of inter-connection between different company services
c(v): lost motivation	m(ii): information gets hidden in long strings of text and nested menus	xi: lack of user tools that could be used by subjects to contribute their skills
q(xiii): low activity level		viii: lack of a way to educate users
l: hard to find the right people for your specific purpose		

As it can be seen from the system diagram above, there are multiple design solutions for any given problem and only problems f & h have a single design solution. The 'role-based incremental profile' design, the 'Friender' gadget and the 'additional tools' (invisibility toggle, snapshot saver, watcher and etc.) have been the design solutions that cover the most number of problems. After those stand the 'Information Visualization' gadget and 'Asker' Gadget (both solving 12 problems), the wiki (solving 10 problems), transformation of participation (solving 9 problems) and the rewarding system (solving 6 problems). At the end, the 'Activity monitoring' and the 'look and feel' solutions stand at the bottom of the priority list by solving 2 problems. The consideration of such a priority list can be of great importance since it could give an idea to the implementers of the system on which design solution to start with (although this priority list should not be the only consideration since some parts of the design are inter-related and might not work without one another even though the number of the problems they solve might vary significantly).

In the following sections, the achieved result from this project is being summarized in three categories: the SocioTechnical Capital that is produced as the result of using the proposed system, general design guidelines to be followed for the creation of online social communities for business organizations and quantitative data gathered through the surveys performed in this work

6.1.1. The resulting SocioTechnical Capital (STC)

One of the major results from my designed system is the SocioTechnical Capital created through the use of various parts of the system. As explained in earlier chapters, the SocioTechnical Capital is the useful outcome from the member interactions and their use of the system, which could be beneficial for both the user and the organization providing the platform for interaction.

In the proposed design of MyLavasoftware, the Social Capital being created as the outcome of the online interactions and activities and also the beneficial party of it (member, company or both) are listed below:

6.1.1.1. Achieved STC In general:

Gained trust (member):

By the monitoring and reporting facilities provided in this system design and also the concept of two-

sided acceptance for a request (e.g. the set relationship between two users should be agreed upon by both parties), trust can be easily achieved and member interactions can become more supportive based on the values that trust between friends brings.

Another aspect of the created trust in this system design can be seen through the attempts for having certified wiki articles (page 87) that could be referred to as more trusted content and also the ability to choose expert community members to get answers for posted questions (section 5.8.2)

Increased Activity (member and company):

Allowing members to choose who they want to be (role selection) and how they want to be labeled and known for (selective label-based rewarding system) within the community brings the benefit of activity encouragement and member satisfaction. Taking away the boredom of daily activities through transforming the activity to be performed in a fun way instead is another approach that leads to increased activity levels (section 5.8.4)

Feedback for the company products and services (company):

By getting statistics from various parts of the community and viewing user comments and complaints, the company can find an internal channel of getting closer to its customers and improving its services based on user feedbacks

Shared knowledge (member and company):

In the proposed system, knowledge can be flown in various ways in-between members and from members to company and vice versa. This is a social capital since it provides means for facts, events and opinions and increases the level of awareness in the community

Saved man hour (company)

The reduction in man hour spent on the community by the company employees is another form of a social capital that my proposed system design has achieved since it results in the company to be able to allocate its resources to more creative tasks instead of manual supervision or extraction of information from the system by humans

6.1.1.2. Achieved STC In applications:

User Roles (member and company)

Roles members chose are social capital since they promote collective identity and help users perform better by reminding them who they are and what they can do. Other members within the community can also get better help in special skill-required fields. The company can also gain benefit from user roles through the added ability to target specific groups of users for certain requirements and gaining a statistical overview of which portion of the target group the built community is mostly attracting.

Answered questions through the ‘Asker’ application (member and company):

The reduced customer support requests for the company as the result of the added ability for customers to get answers for their questions rapidly and efficiently through the use of the ‘Asker’ application is another form of created STC. The members can also benefit from this by getting involved in a conversation with other members around the questions they have and getting opinions of a variety of people on their proposed questions. On the other hand, people become proud of themselves and gain a feeling of self-satisfaction when they help others out within their community (Wang, Fesenmaier, 2004).

Voting on answers in the ‘Asker’ application (member and company):

Votes are a form of STC since they provide the company with a way to know the questions that are raised within the community that cause controversial user opinions (answers that have received an almost equal

amount of positive and negative votes can be considered as controversial). As a result, the company can think over the problem and either clarify the situation or enhance its service. The members on the other hand get a chance to express themselves and their opinions regarding a specific subject through voting and it is easier for the question asker to know the best answer through the received votes.

Wiki articles (member and company):

The knowledge shared through the creation of these articles is a great asset to both the user and the company.

Field expertise gained in the ‘Asker’ application (member and company):

Gained expertise makes it easier for members of the community to target knowledgeable users to get help from. The company can also benefit from experts in assisting their customers for overcoming their problems or in other projects the company might have which would need people with specific field expertise.

Bugs reported through the bug submission tool (company):

The cost for company will be decreased by finding bugs before real product releases using a wide range of volunteers and their variable system settings instead of depending on their limited system environments and man hours

Finding new friends and established connections through the Friender application (member and company):

Once connections are built, the information can be flown in an easier and more efficient way from the company to the users or from the users to their friends. The built network of friends can also be the basis for emotional support within the community and behavior monitoring will be made easier.

Projects done through collaboration in groups (member and company):

an achieved goal and accomplished project can be of great value for both members who have created it, members who will be able to use it through the system and the company who could add it to its services

Ideas generated & exchanged through brainstorming via the whiteboard tool and the creativity gadget (member and company):

the company can get inspired by the generated ideas for future developments and the members can also benefit from it in their personal life

Selective highlighting of Information through the Watcher and InfoViz gadgets(member and company):

this enable the user or company member to only attend to the information that is interesting or important to them and is a social capital because it saves time

Shared items in a bag in the user’s profile (member and company):

This items are observed and selected personally by the members of the community and when shared, they will become widespread through the network of friends. The added value for the member is the sharing of interests and knowledge while the company can get benefits such as a gained insight in the items of interests within the community and their effect on user-behaviors

Following specific customer behaviors through the visualization applications (company):

Since any information related to the customer behavior can bring the company to better service implementations and directing their activities, the implementation of features like the timeline in the

information visualization, the download volume indicator in the regional presentation and etc are considered as a capital for the company.

Enhanced communication speed and reduced cognitive load through the features added to

Friender (member and company):

Features like member online/offline indication, matching of search criteria through the use of transparency indication, filtering options, connection bounds, intelligent suggestions of people based on previous user activities in Friender and the organization of friends into Friend lists help to enhance the communication speed and improve the chances of getting fast results from the search queries. This is a social capital since it reduces the time being spent in such environments.

Security (member):

Security is a social capital, since subjects with the feeling of protection can perform better within the context of their preference and without limitation achieve their goals. This security is supported through individual privacy management controls embedded in the user profile and also various applications like Friender (individual 'friend lists' and 'groups of interest' security settings, the ability to send private messages to friends only and etc.)

6.2. Design Guidelines

In order to have a valuable output from this project work, it is important to summarize all the findings and proposals for a well-structured online social community design that has been brought in this work, in a well-structured format. What follows is a summary of the design principles I believe social community creators must follow in order to achieve a community that would remain in its maturity stage for a long period without the need to constantly change the current design of the community or adding new features and functionalities:

Once the focus and purpose of the community has taken shape and the technological elements to add are considered for the main functionalities of the community, it is time to think about factors that would help a community to remain in its maturity level. To do so, these influential factors can be categorized and acted upon as follows:

Integrating the sociological factors:

These are the factors that affect identity, social interaction and social organization within the community. To meet the sociological needs of an online community, a design should be in a way that would enable the community members to be recognized in the way they would prefer to be recognized (selective identity), be responsible for their own actions within the community as well as monitoring others' actions, and self-organizing their activities (user-centered group creation and administration without the need for external monitoring).

Another important element affecting the sociology of an online community is trust. Trust needs to be supported in any online community to enable continued participation for members. Good privacy management systems, allowing editable target groups for posted items and restricting access for untruthful members can all be a part of creating strong trust within the community.

The formation of the social capital is also a part of this sociological discipline. This capital covers a wide range of community goods created through the social interactions: answered questions, posted wiki articles, voted products and etc. The community creator can form a system that would count the created social capital by members, which will be useful later on for rewarding purposes.

Designed elements that fall in this category:

- selection of up to three roles when joining the community (section 5.5.2)
- selective choice of label as a reward (section 5.4)
- integration of spam reporting through the “inappropriate” button (section 5.8)
- group creation facility (section 5.7.4)
- member life indicator for participation monitoring (section 5.5.2)
- friend list creations (section 5.7.4)
- independent visibility buttons for all the elements in a member’s profile (section 5.10.3)
- introduction of SocioTechnical Capital in the community and its wide instances of existence (section 6.1.1)
- the ‘Recent Visitors’ box in the Friender application (page 65)
- the integration of the “closeness of relationship” feature in Friender (page 62)
- the ‘reminder system’ in Friender (section 5.7.5)
- Transformation of participation (section 5.9)
- Incremental profile proposal (section 7.2.2.1)

Integrating the psychological factors:

It is important to support a good psychological premise within any created community. This is even of greater impact when it comes to the creation of online communities for business organizations. If the correct psychological atmosphere is brought about in the community, organizations get better benefit from the activities of the members and can direct user actions in the way it is essential for the organization. The community psychology is a matter of bringing about user motivation, member uniqueness and good feeling in the users.

All these can be achieved by providing a well-structured rewarding system for the social capitals members create (setting numeric goals for contributions), making a fun environment for interaction and user activities and making members feeling unique by providing them with what they really want.

Designed elements that fall in this category:

- Role-based profile design (section 5.5)
- Asker application rewarding system (section 5.8.1)
- User encouragement to take active part in the community through the suggestion system (page 43)
- ‘Taking part in the fun’ section of the ‘Asker’ application (section 5.8.4)
- The created SocioTechnical Capital within various applications in the community (section 6.1.1)
- enhanced recognition level for new comers in the community through presenting them first in the Friender search results (page 65)

Integrating the technological factors:

If the created community is aimed at leading the users to act in a specific way and do certain things, it needs to provide the members with the appropriate form of technology for it. The provided technology needs to work as promised to create user trust on the system and encourage their continued participation in various parts within the community. Samples of proper technological additions will be a good voting, rating and rewarding system if the users are promised to be able to vote, rate and get rewarded for their contributions

Although no technological considerations or references have been included in this project work, it is always the responsibility of the community creator to consider all the aspects of the technology to be used within a given community.

Integrating the Usability factors:

A proposed system that is made available for a wide range of users to use, regardless of their knowledge and technological skills, should be easy to use and interact with. If a visual metaphor is used instead of

textual explanation for an element within the community, it needs to be close to the user's understanding of that metaphor and easy to learn.

It should also be easy for members to extract the information they need from the community in an easy and not time-consuming manner (avoiding information clutter). Providing summaries of events and statistics and representing them graphically can be a good approach if designed properly.

Navigation within various parts of the community should be intuitional and users need to have an easy way to get back home (their own profile) safe wherever they are within the community.

Designed elements that fall in this category:

- Implemented Information visualization gadgets (section 5.6.1)
- user profile design (placement of gadgets and action buttons based on user-roles) section 5.5
- enhanced navigation in the network of friends (section 5.7)
- various selection and organization of friends in the stack of the Friender application (page 65)
- friend lists created through Friend-Finder mode (section 5.7.4.1)
- 'Extras on-demand' access for parts like the filtering panel (page 64), the Friend Finder mode (page 67), the Friend Browser mode (page 68) in Friender and in Asker application (page 73)
- toggle button for quick changing between friend finding and friend browsing modes (page 64-65)
- incremental profile design for supporting novice and advanced users (page 5.5.1)

Integrating additional functionalities:

In order to make a social community remain in its maturity level, it is critical for the community to have some additional functionality that expands the domain of use of the community. These additional functionalities do not necessarily need to be implemented from the beginning and can be added as additions to the community later on.

This is essential as the technology of the day and user needs change over time and the community becomes older in its life-cycle

Designed elements that fall in this category:

- snapshot saver functionality (section 5.10.2)
- limitless navigation within the network of friends in Friender (section 5.7.4)
- visualizing the query results in Friender and showing the degree of matching the search criteria by transparency (page 5.7.4)
- indicating member online/offline state in Friender for enhanced speed of communication (page 64-65)
- the innovation supporting tools like the creativity gadgets and the whiteboard tool (page 47 and 91)

6.3. Evaluation Data

What follows in this section is a detailed statistics of the findings from questionnaires that were sent out to students and Beta testers for user requirement gathering. Although the findings have already been used in an earlier section, but a detailed statistic has not been provided in there.

6.3.1. The Look and Feel evaluation results

Out of 85 replies, 7 replies had to be called off since the participants referred to the animal name and chose the animal they liked instead of considering it as a naming convention. This 8% error rate could have been reduced if another naming convention that would not have any referral in the outside world had been used.

The results of the survey from Look & Feel test are summarized in chart 6.1

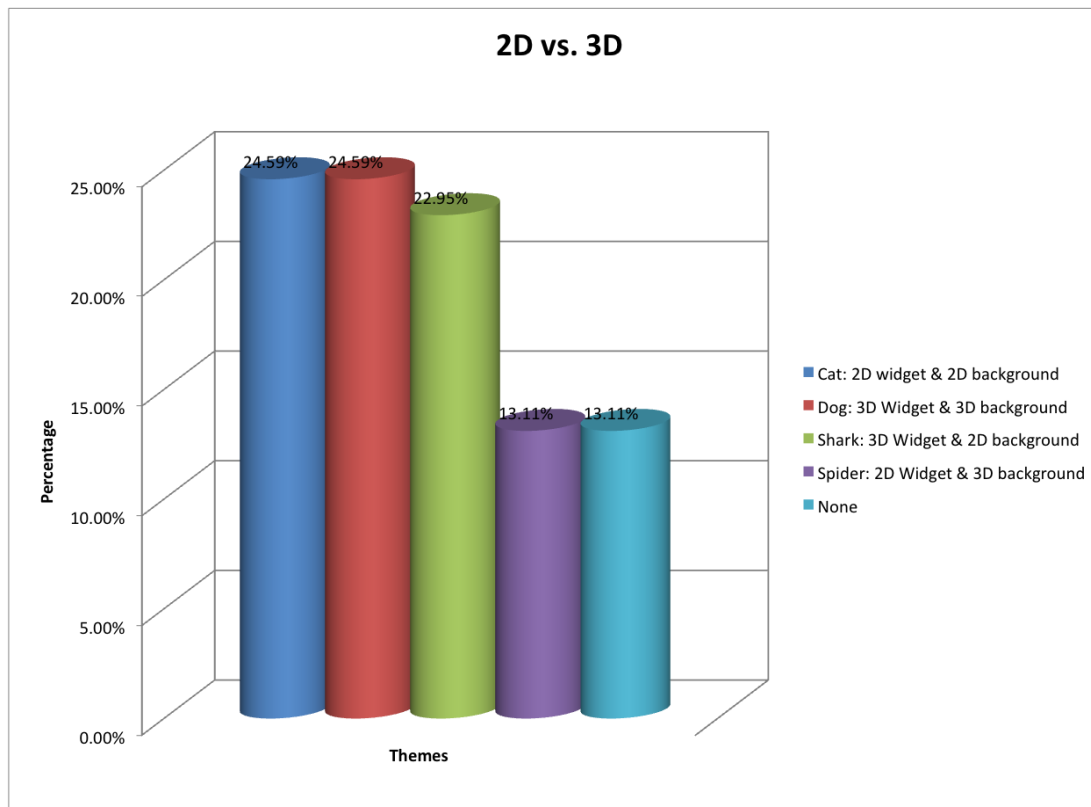


Chart 6.1: The Look & Feel survey results

As it can be seen from the chart, the votes for using a complete 2D environment and a complete 3D environment are equal (24.59%). After that, the votes for a 2D environment and a 3D widget stand with a small difference in percentage (22.95%). The least number of votes has been gone for “using neither of the suggested themes” and “using a 2D widget set in a 3D environment” respectively.

The reason users chose a complete 2D solution was its easiness on the eye. They believed that this theme brought more visual neatness and hence easier to navigate in. Some users mentioned that it makes them feel more in control.

The users who voted for the complete 3D solution, motivated their choice by merely referring to it as something that looks better. Some users felt it was more realistic to have everything in 3D and believed that it would open up a wide range of possibilities to implement real-world features in the virtual environment (like using the window to show the weather conditions and etc.)

Having a 3D widget while keeping the background 2D received votes to stay in the second place after the above two themes. Participants who were positive about this theme defended their choice by mentioning that it would be more logical to put the focus on the tools they are supposed to use and fade away the background from the focus by making it 2D. They simply wanted to be concentrated on their widgets and thought a complete 3D environment would reduce this focus.

The reverse scenario (2D widget in a 3D background) did not receive as many votes as I had expected and users who voted for it had a vague motivation for their choice. They merely used terms like: it feels better and easier to use. This makes the selection of 2D widgets in a 3D environment out of consideration for MyLavasoftware.

And finally users, who did not give thumbs up to any of the presented themes, were worried about system resource usage and complexity of a system for doing a simple thing. They wanted the system to actually work instead of having the extra fuss. But the numbers of participants who fall into this group were remarkably lower than the other 3 categories.

6.3.2. Students Survey Result

Below is the result from the student survey that was sent out to Interaction Design students of Chalmers University of Technology. To make the scope of the project understandable for the participants, they were not introduced to the MyLavasoftware project at all and instead, the questions were aimed at the hypothesis that given if any current online social community would be optimized for student usage, what their answers to the questions would be. This procedure would meet two main goals:

- Avoiding the current design flaws of MyLavasoftware to affect the student answers
- Skipping the time consuming process of familiarizing the participants with the MyLavasoftware project

For a list of the asked questions, please see appendix B.

The survey was sent out to almost 50 students and only 12 students took part and answered the survey questions. As an answer to the first question, the participants mentioned the importance of the existence for a facility that would provide them with the opportunity to:

- Get into contact with other students with the same field of studies and teachers alike or professionals who are in the work industry and have taken the same education as them. Also checking out what's going on with them (status check) (7 participants)
- Searching for articles and video/audio data relating to their studies and share it with others (3 participants)
- Creating/viewing events and also creating to-do lists for themselves (1 participant)
- Having a place to brainstorm around ideas and discuss them (1 participant)

Chart 6.2 summarizes the above statistics.

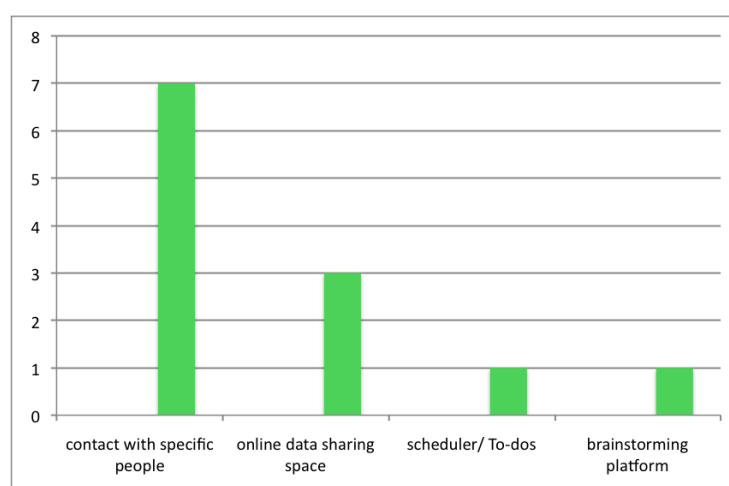


Chart 6.2: The result of the most important facilities to include for students

The desired gadgets to have in an online community were (see chart 6.3):

- Note taking facility like MS OneNote (5 students)

- Calendar (3 students)
- Online data sharing storage (3 students)
- Dictionary (2 students)
- Search functionality (2 students)
- Something to ask questions with (2 students)
- Brain Storming tool (2 students)
- News regarding their chosen field of interest (1 students)
- Chatting facility/ talk pages (1 student)
- Wiki (1 students)

One might ask what the difference between the first and second set of answers is: the first set of answers represent the group of tools that the students considered as a must-have for their student page, while the second group more refers to gargets that their existence would be nice and add value to the activities of the users if present.

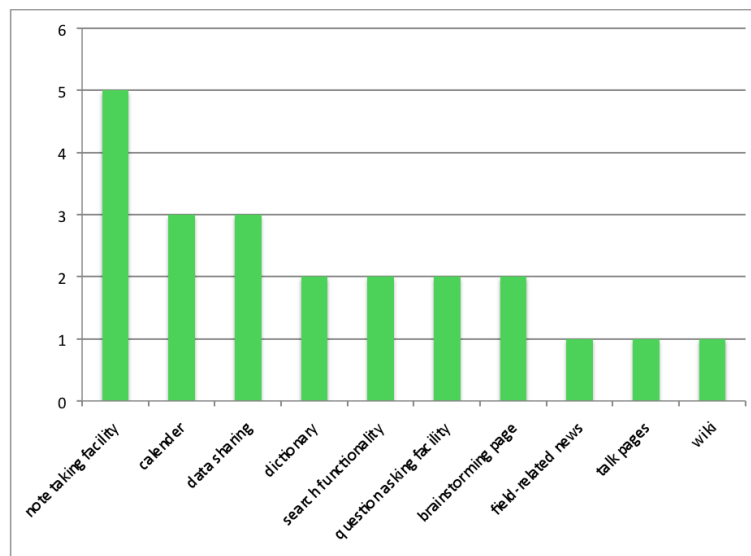


Chart 6.3: List of tools requested by students

The main user roles the students would like to be in contact with are:

- Computer Experts
- Teachers
- Designers
- Programmers
- Artists
- Psychologists
- Sociologists
- Usability Experts

From the above; teachers, artists, psychologists and sociologists were the roles that were new and were not considered in my initial role list in section 5.2. This table was hence updated to reflect the new input gathered from this part of the survey. I skipped adding ‘Sociologists’ as a role within the community, since that would not match the original purpose MyLavasoftware is being built for (a platform for people interested

in the field of security and computer and user experience in general) and is hence unnecessary to be devoted a separate entity for.

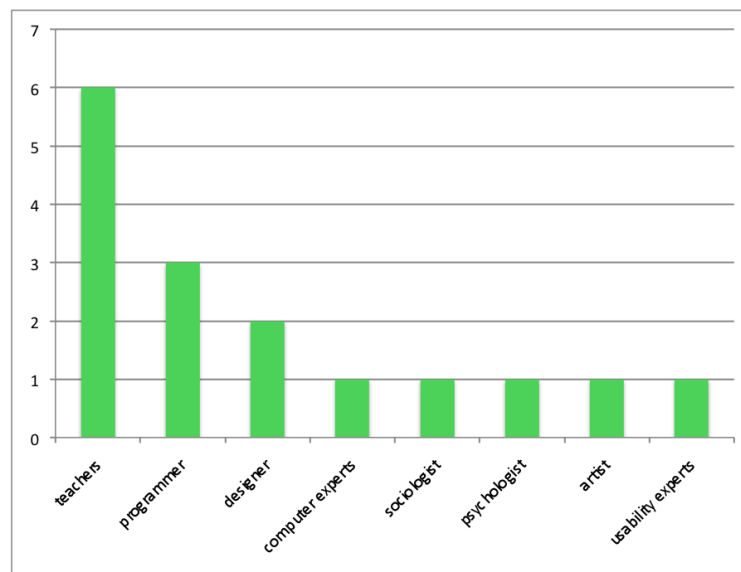


Chart 6.4: Beneficial roles for students

It is logical for students to want to be able to contact teachers within the community. Hence it was no surprise to see the demand for a ‘Teacher’ role within the community in the second place. Having a teacher role available for MyLavasoft members to choose might not match the purpose MyLavasoft is being built for. Although it has been added to the role list in table 5.1, it needs further investigation and analysis of the real value it would add to the community.

‘Artists’ and ‘Psychologists’ might also be roles that would remain in debate as of whether to be added to the available role lists for new members to choose from or not. But since there is an inter-relation between the fields of user experience, human-computer interaction in one hand and art and psychology on the other, considering these roles within the community might be of value.

A summary of the reputation (this is for the rewarding system) students wanted to gain are:

- Merely Points
- Gaining access to documents and etc.
- Getting known better by the system and hence get more and more benefits (like stumble upon) like better services and support
- Labels like Curious, Engaged, Interested, Ambitious, Reliable, Geek, Kind
- Making new contacts as you score more in the community

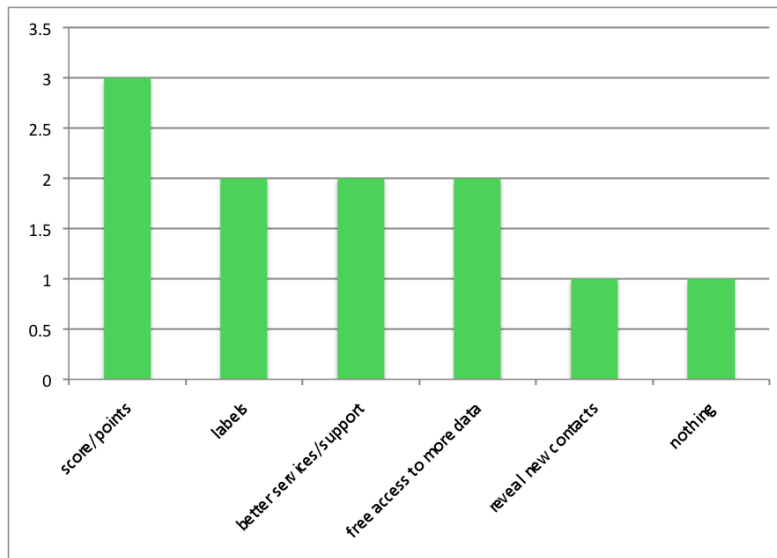


Chart 6.5: Requested rewards by students

My proposed rewarding system that was introduced in an earlier section (section 5.4) has been modified to reflect the above suggestions.

6.3.3. Beta Testers Survey Result

This survey was sent out to 1500 number of Beta Testers that were registered with Lavasoft and from that, 69 replies were collected. Below is a summary of the findings from this survey:

In a question regarding the favorite tools the beta testers would like to have available in their profile page, the following gadgets were mentioned (listed by the order of votes from the most to the least):

- bug submission tool (67 users)
- a place to be able to talk with other members (18 users)
- a tool to find new friends and communicate with them (17 users)
- download button for the Beta (11 users)
- internal Wiki (10 users)
- Lavasoft news (9 users)
- note taking tool (5 users)
- a placeholder for saving favorite items, links and etc. (the bag) (4 users)
- calendar (same as the “time manager”) (3 users)
- design tool for skin creation and etc. (Designer) (3 users)
- question asking and answering service (asker) (3 users)
- technical Dictionary (3 users)
- calculator (2 users)
- games (2 users)
- music player (2 users)
- submitting suspicious file tool (2 users)

For a graphical representation of the above statistics, please see chart 6.6.

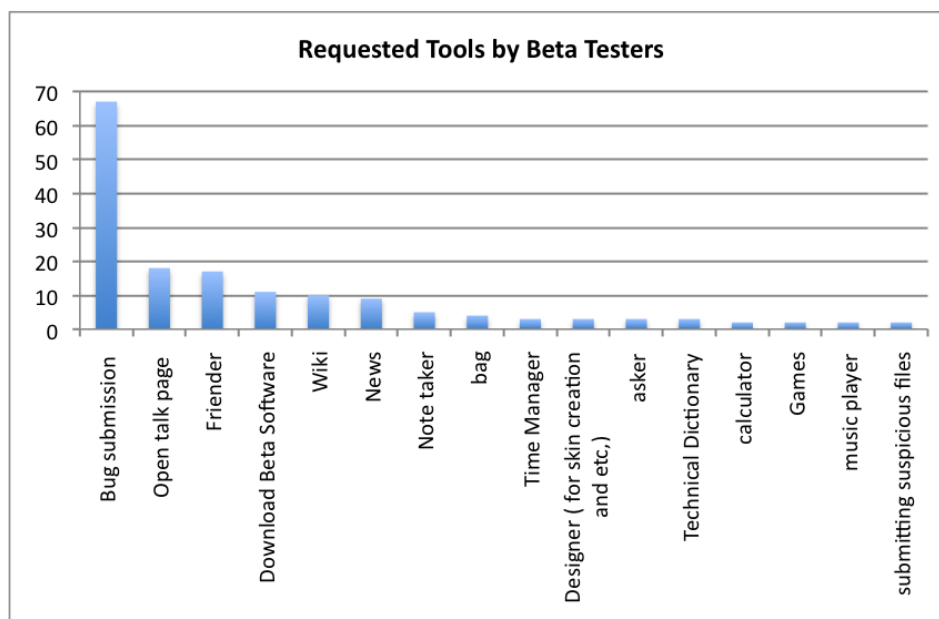


Chart 6.6: Requested facilities requested by beta testers

The second question the beta testers were asked was the type of people (other user roles within the community) that would benefit them and enhance their activity in the community. The results are listed below (from the most voted to the least):

- programmers (17 users)
- Lavasoft staff (Specially the Quality Assurance and Technical support divisions, other mentioned departments were the web and marketing) (17 users)
- malware removal specialists (10 users)
- the company's support team (7 users)
- IT specialists (5 users)
- designers (4 users)
- the company's marketing team (4 users)
- normal computer users without any specific background (3 users)
- the company's web design team (1 user)
- questioners (users who need help) (1 users)

These voted roles are demonstrated in chart 6.7

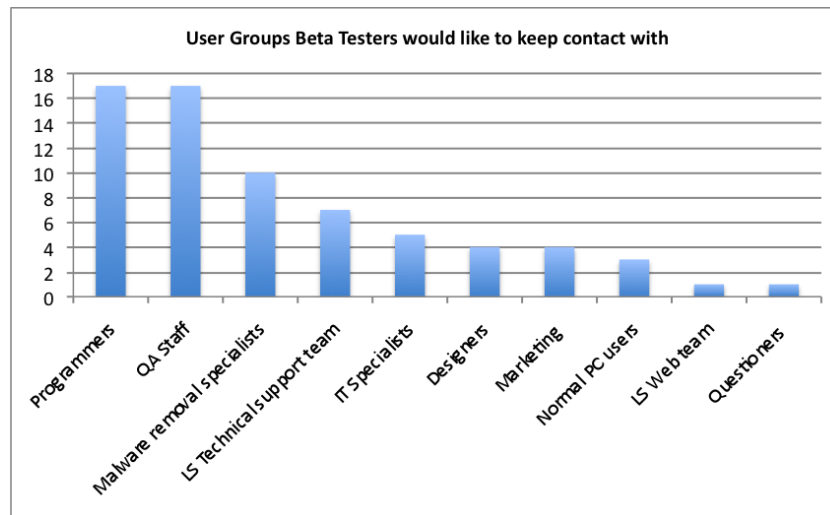


Chart 6.7: Beneficial other roles for beta testers

The reputation or rewards the Beta Testers wanted to gain are (listed ascending in order of popularity):

1. Free Lavasoft Products (18 users)
2. No Reward at all (14 users)
3. Labels/Points (13 users)
4. Tokens (3 users)
5. Getting involved with the software (2 users)
6. Physical Lavasoft Gifts (2 users)
7. Extended Administrative rights (1 user)
8. Years being in the role (1 user)

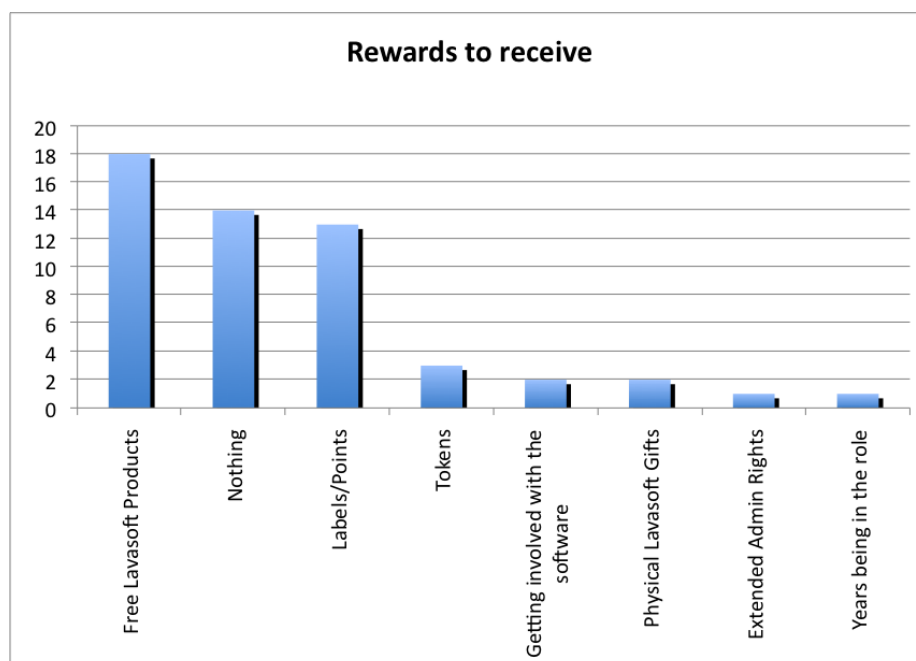


Chart 6.8: Requested rewards by beta testers

Note: Tokens in the above graph refer to vouchers that Beta Testers could receive from the company, which could be used in other sites like special discount from other companies that have partnership with Lavasoft.

6.3.4. Community Terms

As mentioned earlier, a second questionnaire was sent out to all company members to get a series of terms and labels to be used for various parts of the community. The results will only be presented as a series of suggestions and the final terms to use have not been decided and used in this project. This will be a part of the future work to be done in this field (see section 7.2.2.4).

The following terms have been suggested for various parts and activities in the community:

Note: *If a term has been suggested by more than one person, it has been noted down next to it with an (∞ #) indication.*

Message (public/private):

(shout out x2/whisper x2), (voice/whisper)

Online/Offline:

(active/disabled), (plugged [online], wired [online], unplugged [offline]), (Here/Not Here x2)

Inbox:

(database), (tray), (cubby), (drop box), (incoming), (shout box [for public messages]/whisper box [for private messages])

Friend:

(colleague), (link), (comrade), (sidekick), (chum x2), (crony), (mate), (buddy x2), (homie), (peeps), (pal), (dot)

Group:

(class), (crew), (posse), (troop), (cartel), (social circle x2)

Chat:

(conversation), (chit chat), (rap), (yak), (babble), (spazz)

Status:

(state of being), (weight)

Status types:

[(social), (want to chat), (available)],
[(unsocial), (busy), (social phobia), (sleeping)]

Forum:

(stands), (soap box), (rally), (scene), (speaker's corner), (campfire)

Blog:

(Rant), (blip), (jotter [if it is used as a noun instead of a verb]), (blurb), (scrawl), (doodle), (scratch pad), (ramble)

Note:

(reminder), (jot), (scrawl), (doodle), (Post It), (sticky)

Gadget:

(application), (add-on), (doodad), (toy), (bauble), (trinket), (gizmo x2), (doohickey), (thingamajig), (whatchamacallit), (doohickey), (thingamabob), (trick)

Profile:

(head quarters), (mug shot), (who's who), (personality), (attic)

Network:

(community), (hook up), (circuit)

Suggestions outside the listed terms:

Ideas could be “coals” that hopefully turn into diamonds eventually.

Also, we shouldn't have avatars – we should have lavatars!

And we should try to use “lavatory” if we need a trash can function

7. Discussion

In this chapter, I will talk about my opinion about how satisfactory the results from this project are and the experiment I gained during this project work. My insight about the strong and weak points of this project work and possible future works from the point this project is left at are also covered here.

7.1. My View

I consider the goal-directed design approach followed in this work as the strong point of my work and what I can call the main success factor. Designing based on user and company goals and providing them with facilities that would help them in reaching these goals (the reason why they might use the system in the first place), turned out to be highly appreciated by the project owner in the company. It is also expected that the same satisfaction would be gained if the proposed design is put into user evaluation with the target group users. By focusing my work on both company requirements and user expectations, attitudes and aptitudes, the proposed solution in this design work is expected to provide the degree of activity needed in a community to keep it alive and maintain it in its maturity level.

Another approach that has been aimed at in this solution is the focus on active user engagement. I can easily say that the company that is building the social community should consider this focus as a valuable part of my proposed solution, since it is key for encouraging new comers to join and the current users to stay. By having considered adding competitive factors in this design (e.g. the taking part in the fun part of the ‘Asker’ gadget and ‘where do you stand between your friends’ presentation in the users’ profile), active user engagement in community activities is supported and this can be considered as the second approach to ensure a long-lasting life for the social community in its maturity cycle.

One of the other strong points of this project in my opinion is the navigation in time feature in parts like the timeline in InfoViz (page 56) and the snapshot saver in section 5.10.2. Although the concept of time and navigation in it has long been used in software like VMware (a virtual environment to simulate real systems) and in Macromedia flash (for creating animations), but it has never been implemented in this context in online social communities (not any I am aware of).

Although a user evaluation is needed to actually estimate the added value of this feature, but I am expecting that this implementation will make any social community unique in its functionality and adds great value to the better understanding of the member behaviours that are essential for the community. Although it should be noted that the privacy factors involved in such an implementation needs an in depth analyses and research (things like whether users might feel that their privacy is being violated by being monitored for their activities might be of concern to the community), but as it is a common practice for any application implementations to give the choice to the user, this problem can be easily solved by providing the user with the choice of whether or not he would want to be a part of this feature.

I would also like to mention one of the most beneficial design methods that I used in this work: the “Strategy Switching” method (section 4.5). The fact that this method made it possible for me to not limit myself to a rigid way of thinking and provide the possibility of innovative ideas to affect my design work was not the only interesting fact about this method: The use of this method became more interesting for me as I realized I was using it subconsciously in the name of “Idea Book” in which I was recording all my ideas as they were occurring to me throughout this project work.

When I read about this methodology in the “Design Methods” book and saw how intuitive it was, the will to put my recorded innovations in the Idea Book into action became stronger and this resulted in a final project work that I was totally happy with its achievements in the sense of creativity and innovation.

On the other hand, the ‘morphological charts’ methodology used in section 4.3, was not as satisfactory as I expected. Although it gave me the vision I needed to start my work with by grouping the predicted system functionalities and the possible way of implementing them, but after using the ‘Classification of

Design Information, the results from the ‘morphological charts’ method somehow started to vanish and be replaced by the outcome of the latter method instead.

One other failure of this work was the fact that I could not find a good way to educate users (one of the company-side problems (problem viii in section 4.4)). Although the overall structure of the system and usage of tools like the wiki, the ‘Asker’ and the ‘Friender’ all partly contribute in this field, but a direct tool that the company could use to educate the user about its products and services was not implemented or introduced in this work. This can be considered as a part of something to be done in the future and possible ways of achieving it could be to create new communication channels and facilitate technologies like video tutorials, tooltips and interactive help avatars to promote this education.

One big limitation that occurred to me alongside this project work was the lack of access to a wide range of students to send out my survey to. The decision to send out an online questionnaire to students was based on the hypothesis that a mailing list would be available in order to reach all the university students. But later on, I was informed that the only available mailing list was for students studying the same major as me (Interaction Design). This defect caused the results of the survey to be based on only 12 answers and hence could not provide me with as much information and wide spectrum of opinions and ideas as I needed.

And last but not least, the fact that a system evaluation was planned for this project work (phase 5 of the project plan described in section 4.Planning), but the time to perform it could not be found was a negative aspect that affected my work to some degree. The major issue here was my underestimation of the time needed to propose a design solution for a system that has a wide spectrum of problem domain. Although the lack of a system evaluation does not reduce the value of this work to my opinion, but it is a necessary part of this work and implementing the system without performing the user evaluation on it is not recommended at all.

7.2. Future work

In this section, I’m trying to explore all the possibilities for future works for this project from where this work was left. The points uncovered in this work as a result of either lack of time or skill will be talked about and suggestions for expanding the scope of them will be reviewed.

The following propositions for possible future works are sectioned together based on their relationship to the main work done in this project. However, some parts of the future work are explained in the Action section instead and that is when a system is described and it is felt more relevant to talk about the future work at the end of that section. These sections are titled as “what’s next” and are in the “Action” chapter of this report.

7.2.1. System Evaluation as a whole

The proposed system in this project work will need to be user-evaluated to gain an insight of whether it is user-friendly, completely fulfils the company and user needs and can be a good base to start the actual technical design of the community on. This evaluation does not need to include a detailed consideration for how various tools within the community would work and only considerations for the Friender and asker gadgets would suffice. The success or failure of role-based design can also be evaluated through testing the system with different profile layouts for a few user roles.

The user evaluation can be performed through paper prototyping the system (wizard of oz method) in parallel with direct observation. Flash mock-ups can be a good way to make the system interactive, so evaluation participants would have a better perception of the system and user-errors that can happen as the result of lack of proper understanding of the structure of the system (can be resulted from the wizard of oz method) could be avoided. But the latter requires more time to be spent to actually implement the whole system using the Macromedia Flash Software.

Regardless of the chosen evaluation method, selected users for the evaluation should be from the communities' target group and cover a wide age range and computer usage background. The results are expected to provide important input for understanding whether or not the system is too complex for novice users or too simple for advanced users. It can also be determined if all the required scenarios of use have been covered with the proposed system or will it need to be enhanced to cover even more scenarios.

7.2.2. Partial system evaluations for detailed analysis

7.2.2.1. Incremental Profile

The idea of implementing an incremental profile in the community that was introduced in section x, needs further investigation. As usual, a real implementation for evaluation purposes needs to be made of such a system and user activities within a long period of time needs to be observed and analyzed. Then based on the findings through the observations and summarizing the user reactions and feelings towards such an implementation, answers to questions like below can be gathered and a decision on whether or not to use such a feature be made:

- Will the subjects feel un-respected when they realize that the real system was not presented to them from the beginning?
- Should the users be given the choice to be treated as novice users or experts?

Since the implementation and also observation of the user behavior in such a system will be a time consuming process and not as easy to achieve, a whole new project can be assigned to this part only.

7.2.2.2 Information Visualization

The work done in the information visualization section of this project is by no means a finished work. The vast area that information visualization covers makes this part of the project incomplete and the possibility of having a future work for it to open up. The possibilities that can be considered for this area of online communities are: evaluating the current infoViz suggestions (section 5.6.1) through user testing and expanding the current visualization works to cover even more aspects of the types of statistical data that could be presented for an online community.

A key research problem in the field of InfoViz is to discover new metaphors for representing information and to understand what analytical tasks they support (Gershon, Eick, Card, 1998). What should be kept in mind in this matter is that information visualization is a single entity in a large and complex system (in this case, the online social community being designed), hence the understanding of the system itself and the user needs is the first step before deciding upon and applying new metaphors to the visual system.

Since it is highly important for the infoViz work to be understandable for the viewer without any specific learning, the evaluation phase becomes an important step of the future work. One suggestion for evaluating an information visualization work is to provide two different versions of the same statistical data to two groups of users and asking them to interpret and analyze what they see. The results then can be compared together and based on the closeness of the user answers to the real answers and also the user comments while working with the infoViz piece, the proper corrections can be done.

To add more parts of the community to the information visualization presentation, first a system evaluation with real data needs to be performed; Meaning that users need to interact with the system as a whole in real situations and then they can be asked to take note of the parts they had a hard time getting an overview of and they felt like getting immersed in data that would take their time in grasping and

finding the expected results. Based on these feedbacks and comments, more parts of the system could be considered to be added to the visual presentation gadget in MyLavasoftware.

7.2.2.3. Complete 3D design of the community

Since the results from the evaluation of the 'look and feel' test showed that a 3D solution is as desirable as a 2D solution for the community design (6.1. Look & Feel survey result), what follows here will be a valuable future work for any online community.

In order to get a good insight of user behavior in a 3D community environment and better estimation of whether it will be an approachable design decision for MyLavasoftware, further work needs to be done in this field. Creating an actual user profile in 3D and making it interactive would be the next step to follow from where this part of the project was left behind.

A scenario based design would be a good and less time consuming way to proceed with from this point. What this means is that, first a scenario of use will be written (e.g. a new user who has joined the community and wants to create his profile and make some friends) and based on that, the appropriate community sections will be created in 3D.

The benefit the scenario based approach has is that the designer/evaluator does not need to create the whole community in 3D (which will be a really time consuming project and needs a team of designers and programmer to work on) and instead only some parts of it that will actually be used in the user evaluation will be worked on.

Further to the 3D design, the tasks that the user needs to perform to act on the created scenario will be listed and based on that, the created 3D environment will be made interactive. A click-counter can be used in various parts of the interface to record the clicks one performs in various sections to gain statistics of the most commonly clicked areas and user errors in performing certain tasks.

All of the above suggested system can be implemented using the following software:

- Auto Desk's '3Ds Max' or 'Maya' for creating the 3D environment
- 'Adobe Flash' for making the environment interactive
- 'mdm Zinc' to add the click counter scripts to the flash mock-up for the specific areas defined in flash

7.2.2.4. Community Terms

Since the purpose from collecting suggestions for community terms to be used in MyLavasoftware was to introduce the idea of having a unique language for the community and the actual terms to be used were not selected from the suggestions, it would be a part of the future work that needs to be done in this respect.

The collected suggestions of terms can be found in section 6.3.4. Community Terms of this report. The next step for the future work from this point on will be to hold a brainstorming session in which everyone can vote and discuss around the collected terms and select winning terms for each category and put them into sets of suggestions to be presented to the public. Then the result should be put into action through an existing community (changing the existing communities' terms to the selected ones) and asking users to perform certain tasks within it.

After that, users can provide feedback on the terms and the degree they understood and were comfortable using them. At the mean time, the rate of user errors can be analyzed and based on these findings, a decision could be made on whether or not to go with a specific set of terms.

8. Conclusion

Online communities of users have become a target tool for business organizations nowadays. In order to best tailor these community designs for organizational use, both company side and user side requirements need to be taken into account. General requirement gathering methods like questionnaires and study of related work can be a starting point for gaining such an understanding. The main user-side requirement identified through both the questionnaire results and also related work research was a way of facilitation of user powers. The main company requirement from the system was a platform in which the company could gain a better insight of the users and get help from them in various forms.

To overcome the situation in which user potentials are not promoted as they should by the use of the online community, I have started my design by setting up roles for users with the aim of ensuring them that they are the ones in the center of attention and they will receive what they need. Based on these roles, appropriate tools that users could use to both accomplish personal goals and contribute to the company goals have been created and added to the user profiles.

The angle I tried to look at the problem at hand was to find a common point of interest that would be a requirement for both the company and the user, believing that using this point of interest would enable me to come up with a single central design solution that would make the user the focus of the design at the same time as having the company benefits in consideration.

Identifying the community life cycles and determining that the current MyLavasoftware community stands in the growth stage was also a great help for me in orienting my thoughts and actions. It helped me to consider the major factors that would make a community reach the maturity level and the possible ways to make it stay there.

The final system design reached in this project is what enables a novel way for user-based interactions and collaborative support. In addition to enhanced communication level between various groups, the MyLavasoftware project is believed to enhance problem-solving capabilities within various departments in the company by the quick statistical information that could be derived from the system. It will also provide the opportunity to create new business and products, and increase team productivity as the result of reduced time in looking for information and sharing them, and also use of technically enhanced business-customer interaction.

My goal in this process was to design a flow for the community, which would help MyLavasoftware to get to the point of maturity in its life cycle and remain there while user activities are appreciated to the required degree, company goals are met by the use of the system and interaction is made easy in-between users and between users and the company.

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APPENDIX:

Appendix A: MyLavasoftware Internal Requirement Gathering

To be able to present all departments in Lavasoftware within the MyLavasoftware Community and satisfy both Internal and External needs, I am sending out this small questionnaire to all the department heads and decision makers within Lavasoftware.

I would appreciate it if you could take the time and answer all the questions carefully and thoroughly, as this is the door for you to tailor MyLavasoftware according to your departmental requirements.

On Friday the 13th of March, there will be a brief introduction to MyLavasoftware being held by the Web Department. What I would like you to do is to answer the survey questions **before** this presentation, then **review** your answers **after** attending this presentation and think if your answers are going to change after what you saw.

Note down the changes (still keep your previous answers) and explain why your answers have changed after seeing the presentation.

Your input is very important in the design process of MyLavasoftware. The data gathered from this survey will be used as an input for designing and expanding the various functionalities of the community.

So please set aside enough time for this task and tell us what you want from MyLavasoftware as long as we are listening and it is not too late! It would be hard to redesign something that has already been designed. So let's start in the right way from the beginning.

1. What purpose do you have from using MyLavasoftware for your department? (Your departmental goal from the MyLavasoftware project)
2. If you were asked to have a slogan for MyLavasoftware, what would that be?
3. How are you predicting to benefit from MyLavasoftware for your department?
4. What features/ tools/gadgets you think MyLavasoftware should have in order to help you get the benefit you expect from it?
5. What groups of target users within the community you think would be the most helpful for your department? (e.g. programmers, novice computer users, etc.) Name as many as you want.
6. What types of activities/cooperation you would want the interested users from the group(s) you just mentioned to perform for you and your department?
 - a. In order to encourage user contribution for Lavasoftware, it would be nice to have a rewarding system so that users earn points for the activities they perform. Since all activities cannot be measured using the same number of points because of their differing nature, please prioritize the activities you mentioned above from the highest (in importance for your department) to the lowest. We will design our rewarding system based on your priority list.

7. Would you like to have only a single representative from your department to have activities within the community or do you prefer to involve all your staff actively in the community? (Answer only if applicable)
8. What is your opinion about having your own specific department page or blog within the community and updating it with your departmental information? (Do you think it is beneficial for interested people to be constantly updated or do you think it is a waste of time and human resources to have a staff member spending time on that?)
9. What features in the www.lavasoft.com website would you like to be transferred to MyLavasoft?
10. Would you like to use MyLavasoft to communicate internally with other Lavasoft staff/departments?

If so, how would you like to do that?

What benefits would this way have over email communication?

11. Is there any internal tool you are currently using shared with other Lavasoft employees and would like it to be transferred to MyLavasoft instead? (Like the Outlook calendar, Travel reports and etc. please come up with your own examples!)

Explain briefly why you think bringing that tool to MyLavasoft would be better than the current way?

12. What types of quantitative data (statistics) would you like to receive from MyLavasoft? (e.g. the number of people visited your blog entry or purchased Ad Aware through MyLavasoft)

How do you think this data is going to benefit your department?

13. Do you think it would be a nice idea to have MyLavasoft connected to other online communities like Facebook (so users can share information between the two communities)? Why?
If your answer is positive, can you think of which major online communities would be beneficial to connect to (e.g. Facebook, LinkedIn, etc)
14. Do you think it would be nice to have some fun applications in MyLavasoft as well (Like small games)? Why?
If your answer is positive, what fun applications do you suggest to include? (E.g. games, drawing boards, etc.)

15. What can your department do/offer within MyLavasoft to bring a feeling of belonging for the community members? (to make them come back and visit often)

Appendix B: The Student/Beta Tester Survey

What Gadgets/Tools would you like to have in your page that would be useful in your online activities in MyLavasoft? *e.g. Friend Making tool, Bug Submission ... Feel free to come up with creative ideas in here!*

From the Gadgets you mentioned above, which ones are the 3 most important ones? *Please sort them according to your priority preferences: the first is the most important*

What groups of people you think might be the most beneficial to you in the community? *e.g. Teachers, Lavasoft QA Staff and ...*

How would you like to get rewarded for your contributions within the community? *e.g. if you want to get a label next to your profile, what would that be?*

Appendix C: The Idea Book

As you are living your everyday life, you encounter situations that might bring inspiration for you for the project you are working on. This made me to create this idea book to keep track of my ideas during my thesis work (the ideas that would just pop up when I am doing something else. They could come from watching a movie, reading an article or etc.)

This is inspired from the 'Strategy Switching' method described in section 4.5 of this report

16 Feb:

Idea: By allowing people to express their accomplishments, we can build social cachet around user contribution and strengthen the will in the users to cooperate with us more.

It's easier to feel like you're making a difference when you can see your contribution to the larger movement. User engagement is the key

How to achieve it: idea suggestion application, which would allow users to create ideas and invite others to vote for it. There could also be a brainstorming board in which users can involve in brainstorming sessions with one of the Lavasoft staff as observer. The idea then could be submitted to Lavasoft as a project plan if it receives enough thumbs up votes (to the innovation team).

After that further planning can be accomplished by discussing it with people interested to get more involved in that project. Then in return, the idea creator's name can be listed in the cast and crew section of the new product (as a reward).

A small update to this idea (03 March)

When I was playing the Texas HoldEm Poker, I realized how addictive it was for me because of only one simple factor: I could see how many chips my friends in Facebook had at the bottom of the game page and I this made me feel so competitive and encouraged me to go back and play often with the hopes of climbing up the levels and have a higher score than my friends.



This made me think of using the same system in MyLavasoft to encourage users to come back. Now instead of playing poker, this could be used as a reward system for other applications within the community, like the ones who submit suspicious files would get chips and be listed within their friends/competitors. The more files they submit, the higher ranking they get. Of course there needs to be a way to stop them from submitting unsuspicious files for the sake of only increasing their ranking (like a

member of the Lavasoft Malware Labs team could give them a bad reputation or take away their chips for cheating if he fills like he receives a lot of clean files from a user)

21 Feb:

Idea: Creating a digital character for the community that would welcome people and be with them when they need him; sort of like the office assistant in the good old office 2003 version...

In this way, users will feel like they are not left alone. Also it would give a special character to the community, like there is a host there eagerly waiting for you to welcome you and entertain or help you, unlike Facebook; you do not consider any specific character for Facebook per se. You only go there with the hope of having an online friend there interacting with you.

How to achieve it: The continuous interaction with someone who we can call the MyLavasft Administrator. He can be a fictional character created by the Lavasoft team and interact with the users.

23 Feb:

Idea: It's nice to come up with your own special terms for the components you have in your online community in order to make it special and unique from other social communities. What this could also refer to is to create **a special MyLavasoft language and vocabulary** with terms that **merely belong to MyLavasoft Community** members!

Examples in Twitter are:

Followers (instead of friends)

Tweets (instead of messages)

Get Satisfaction (instead of forums)

How to achieve: this could be a part of the internal survey questions to allow people from all departments to come up with ideas and terms and then the best choices could be put into action

Idea: Twitter works based on the idea of "constraint inspires creativity". We might be able to use this idea in some parts of our design, to force the users to be creative.

How to achieve: The constraints can be applied to cases like:

The number of topics a user can open per week, so they actually open topics which are really essential and need attention

The number of roles people can take, so they only work hard on the main role they want to have in the community and be the most productive in that area (his duties and contributions as a Beta Tester)

Having a balance between the numbers of followers/friends and being a follower/friend of others (have a limit ratio). In this way, the members cannot be a mere follower of others which would limit them in being active (since most of their time would be spent on seeing what others are doing instead of doing something themselves). By having the constraint in the ratio between followers and following others, the users will be motivated to be more active in the community in order to attract enough followers.

04 March:

Idea: After analyzing the current online communities, I figured out that what they mostly lack is providing a space where users can store information. In order to do that, users need to use other non-community based web applications like Google docs to store their documents and daily notes. What we can do to make MyLavasoft unique is to offer an online storage space for users where they can store their private data for future use.

How to achieve: The proposed system can be as complex as GoogleDocs in which users can store even spreadsheets and presentations in. A simpler system that would only store text files could perfectly work as well. (So users can note down their daily thoughts and etc in.).

One interesting feature this utility can offer would be to allow members to add posts from other users to their personal notes with a click of a single button. (They might find an article or blog entry or a simple solution from a member interesting and useful and want to save it for themselves for future reference)

04 April:

Idea: Attending a seminar about Information Visualization which was held in Visual Forum 2009, brought up this great idea in my head that InfoViz is what is lacking in most Social Networks. You have to look for the information and grab that specific piece you want among a large content.

Whilst the information shall come to you, not you going after it, InfoViz could be the key to solve this problem.

Some key benefits:

Helps in obtaining the information in the briefest and most understandable way instead of scrolling down huge sets of numbers and statistical figures

Reduces heavy cognitive load by simplifying the content into visual representation of them

Clear vision of what the data is

The ability to have different views of the same data by a simple click to get what you are looking for

Efficient use of space

How to achieve: I will be working on examples of how this could be used in my design

Example:

Visualizing the current online users by their role or what they are currently looking at/doing with colored maps. See the image below



Benefit:

This could help the Lavasoft employees from various departments to send out certain information/requests/promotion according to the current online users and activities taking place

21 May:

Idea: Adding a snapshot saver as is used in VMWare software. This will be used to save the current state of a user's profile, so he could easily return back to it later on

How to Achieve:

Add a snapshot saver button to the user's profile page and a storage space that keep records of the changes (a limit needs to be placed to avoid massive storage uptake)

Benefit:

This feature will bring confidence in the user to freely do changes in his profile with the confidence that there is a back up to return to. This will also add to the security of the community by enabling to track-down what specific change has caused a problem or risk in the community (the company can use it as a tool to track down actions in case there is a report of someone abusing the community) or a user can track down his own profile for changes that he does not remember.

22 June:

Idea: Using a life indicator in the user's profile page. A battery at the top of user profile page will be used to indicate the life of the user in his current role.

As mentioned in the report, if a user does not perform enough activities related to his role, he will lose it and be reverted to a role system suggests him instead (like if it detects an increase in the number of activities related to other roles, it will offer the user to revert to that role instead or to "Here for fun")

How to achieve:

A battery like life indicator can be placed in the users' profile page and this could record the activities that a user performed and adds up to the life if the activities are in a positive way.

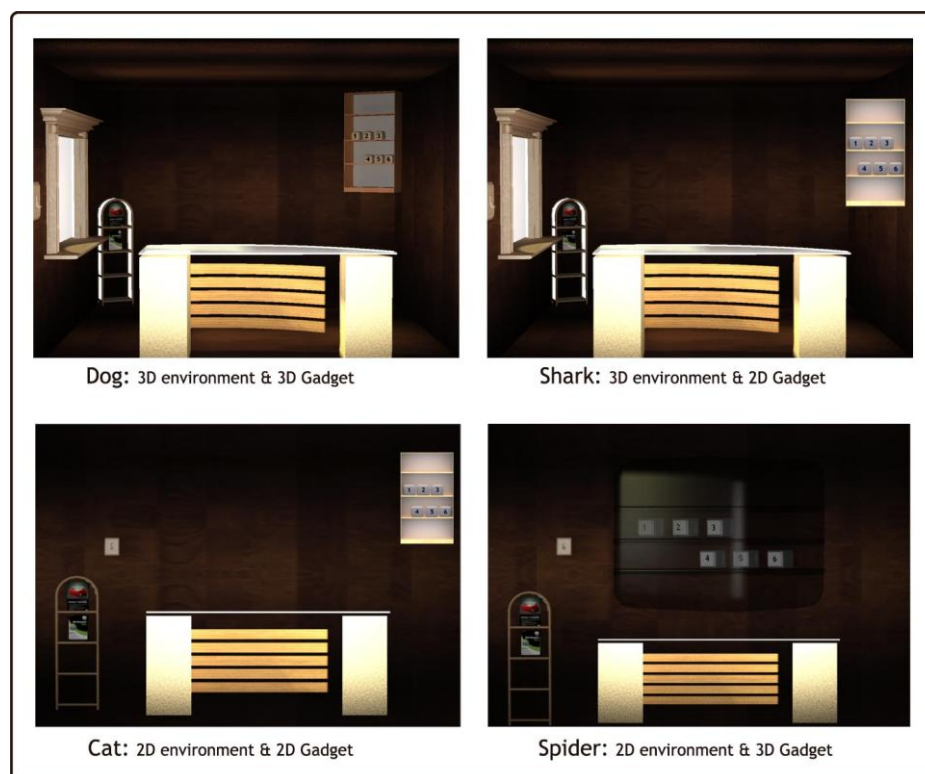
Life will be reduced if a user receives a spamming/inappropriate report on his published content or remains inactive for a long period of time.

Benefit:

This will be used as a reminder for the user of his online presence and gives feedback of how active he is and how much more he needs to do to be able to be active. This will encourage more user participation and a livelier community

Appendix D: Theme Test Questionnaire

The URL to the live form is: http://www.lavasoft.com/internal/myls_thesis_survey/



Look at the above images...

Assuming that the room is your profile page and the wooden shelf is where your gadgets/tools are in, which of the following alternatives you would prefer to use in your MyLavasoft profile page?

Notes:

- The navigation is still performed in 2D and the room is static. Only the gadgets might be dynamic in some way
- The naming (cat, dog...) is only for making the reference easier and does not relate to the theme at all* *I'm trying to figure out if the idea of using a 3D environment as your working space would work instead of the current available flat profile pages and if so, to what extent shall things be in 3D*

☐Cat

☐Dog

☐Spider

☐Shark

☐None

Explain briefly why you chose the above theme? What feeling does it evoke in you when you look at it? **If you chose "None", please explain why and how else would you like it instead?*

Appendix E: Problem & Solution Diagram

