DocNo: 001.A.1.1

Grape
Feasibility Analysis Report
Version 2.0

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2015-04

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Document Language:

English

Revision History

Date	Version	Description	Author
2015.4.2	1.0	Initialization of the report	Hunter Lin
2015.4.6	1.1	Add "Other Social Factors" and "Conclusion" Parts in.	Hunter Lin
2015.4.10	1.2	Congregate the part of Morning's	Morning
2015.4.10	1.3	Alternative solution and Cost/Benefit is included	Listen
2015.4.10	1.4	Introduction and Supposition is included	Birdy
2015.4.10	1.5	Proposed System is included	Syachi
Final Date	2.0		

Key Words

Feasibility
Discussion, Interaction, Feedback
Assistant

Abstract

When it comes to a situation when a meeting or a class is held, we seem to be accustomed with being a listener or even an outsider. That is unsatisfying for both the leaders and members. Leaders want more interaction with the participant, while the members are some trouble catching what the leaders are heading for.

That is where we are in. We are trying to set up a platform where leaders and members can communicate and discuss freely. Outlining, voting and discussing will be three main functions we provide.

This document aims to analyze the feasibility of this proposed system in multifarious point of views.

Contents

1. Introduction

1.1 Propose

Nowadays, we are having more and more meetings and lectures. In a meeting, the leader makes his speech and attendees share their opinion. Sometimes, they need to raise their hands to make a decision. In a lecture, the speaker gives a lesson and listeners take notes. Sometimes, the speaker may ask some questions and listeners need to feedback. We can find there are some common parts among these situations. In such case, we are in a group. We need one to act as a leader which is the center of all the activities. We also need ones to act as members to listen to the leader. Between them, interaction is very important. Such interaction includes sharing opinions, voting and answering questions. We define such case as a mode called 'leader-member-interaction'. Such mode is more and more popular today because of the speedup of information transfer. We find there are some apps, software and systems which are designed to tackling one certain scenario of such mode, like lecture or meeting. However, we didn't have a tool to uniformly to process such cases. In this way, we find the potential of inventing something dealing with all such cases of 'leader-member-interaction' mode.

We decide to develop an system which is designed to deal with 'leader-member-interaction' situation. The system offers a way to organize a group to include the leader and members and gives tools to realize kinds of interaction. To crystallize it, we may use it in the meeting as a tool to organize voting, we may use it in the lecture as a tool to raise questions and discuss, we may use it in a class as a tool to share lesson materials. Of course, there will be something which we haven't image that makes use of it and relies on it.

This document is written for officers, students, teachers, professors and so on. Anyone who intends to make use of it is welcomed.

1.2 Background

This system initially names as Leader-Member-Interaction System, short for LMI.The task presenter of this project is*Undefined* team, while the developer is also *Undefined* team, and the supervisor department is the software college of Shanghai Jiaotong University.

1.3 Definition

LMI: Leader-Members-Interaction Mode. It comes from very common scenarios in daily life. In such case, there is a group of people. One is the leader which is the center of the group and others are the members which listen to the leader. They have a strong need to interact with each

other to get more information and generate creative ideas.

Group: Certain numbers of people which gather for the same target or subject.

Leader: The leader is the center of the group. The subject or the target is raised by the leader. He can delivery speech, or give lesson to realize the subject or the target.

Member: The member comes to the group for the same target or the subject. They listens to the leader to get what they want or what they think is useful and helpful.

Vote: An activity to make choice of some questions.

Share: An activity to upload some files like documents, music which others in the group have access to download.

Discuss: An activity to raise question and talk about it in the group.

2. Presupposition

2.1 Requirement

LMI system is a user-interactive application. It provides user with platform where they can gather in to groups. In the group, the system request that group-members should have leaders and members. It integrates with voting, sharing and discussing functions which to make it convenient for leaders and members to interact in different forms.

2.1.1 Functional requirements

Users inLMI system can create groups and invite others to your groups. Also, you can search and attend others' groups which you are interested in.

In the group, we have four main functions. One is voting. Leader can design and generate voting in order to organize the members to make decision. Votes can be instant so that if you encounter an unexpected choice, you can make immediate reflection to solve it. Vote also can be lasting so that you can use it as a tool to design an investigation or test.

The second function is sharing. Leader can upload resource directly in the group. Resource includes files, books, pictures, music and so on. Members should have the leader's permission and then they can upload. All the group-members can download resources. According to the size of the group, there is limitation to the total amount of resource.

The third function is bulletin. Leader has the only writing authority to the bulletin. It is a place where leader publish important and emergency information.

The last function is discussing. No matter members and leaders, they can raise questions in the group. One question will induce a new page for discussing. Others' opinions and answers can follow. The one who are replied to will receive message to remind him.

This is a very useful tool for people to deal with 'leader-member-interaction' mode scenario. It integrates necessary tools so that it will be convenient for users in the group to

take part in different activities in just one system.

2.1.2 Non-functional requirements

1) Usability: That will be elaborated in the interface section. We pursue simple and terse interface to let users to know the function clearly and make good use of it.

2) Reliability:Our system should have a strong robustness. It will receive large amounts of application or deal with great deal of messages. The space of the database should be large enough and the method to deal with lots of useless temporary files and messages should be optimized. The safety is also important. Because it need to personal account to delivery speech, so we need to assure all the accounts' security. Also there are means to deal with stolen accountsor white accounts.

3) Performance: Instant voting and discussion part have a great request of quick response time so that we can have immediate feedback. Sharing function also need a good program to improve the speed of uploading and downloading.

4) Supportability: Our system is expected to be transplanted to PC, Android app, iOS app and WP app so that it can realize the synchronization on one's account from different facilities.

2.2 Objective

1) Improve the group system in order to be compatible for different scenarios of LMI mode.

2) Integrate tools convenient and helpful for the leaders and members in the group to interact.

3) Easy access to each function so that we can use them and transfer to other tools quickly and freely.

4) Instant message sending and receiving to make discussion on the scene. Quick upload and download to make sharing more convenient. Different kinds of votes will be for different targets as different means.

2.3 Condition, Supposition and Limitation

1) Minimum life time of system: 2 years

2) Time to select suitable solution: 1 week

3) Our system is sponsored directly by software engineering department of shanghai Jiaotong university, both technically and financially.

4) Conditions of developing/run-time environment in hardware and software

Hardware:

a) PIII or more advanced PC, laptop
b) Minimum runtime memory requirements: 128M
c) Hard disk space for installation: except the application server and database server, clients use browsers to get access to the service.

Software:

a) Windows 2000/xp professional
b) Windows server 2003

2.4 Feasibility Analyzing Method

1) Customer survey
2) Experts consultation
3) Market survey of similar or relevant products

2.5 Evaluation Criteria

The criteria of evaluating the system are: functions supported or provided by the system, time cost to develop the system, and the usability of the system.

3. Existing system analysis

3.1. Introduction

In this section, we will focus on several systems that provide part of the functions in ours. And we will have a closer look into them and explain the reason why they are not what we are looking for.

3.2. Existing system

In this part we will have a look at all kinds of systems that provide one or more same

functions as ours do. Mainly we will focus on those which can:

1) Raise a vote(quick vote or ordinary vote)
2) Discuss in groups.
3) Share a file or document.
4) Summarize a discussion or class and get some feedbacks.
5) Provide a convenience access to the system.

3.2.1. QQ

QQ is a multifunctional social system that covers most of the functions above. So we will compare QQ with our system, judging by factors listed above one by one.

For raising a vote, QQ doesn't perform well for the following reasons. Firstly, You should create a QQgroup if you want to raise a vote. A group discussion, with a more convenient access to create, however, does not provide such service. This means you should pay much time on creating a QQgroup before you can raise a vote, which is not what we expected. Moreover, a vote in a QQgroup does not provides a clear view about whether a member has voted or not. Besides, vote in QQ does not support large-scaled vote like a democracy note in a department.

For group discussing, QQ provides a free environment for everyone to chat freely. This may be not what a group leader has expected. Freely chat will lead to chaos and turn a discussion into a chat. What's worse, when several topics is discussed together, one can hardly point out which topic a message is for. This will cause collisions between topics and bring confusions to all the members.

For the third factor, QQ does well in providing file transporting service. This includes uploading, saving files in server, and downloading. Yet this is also not so perfect because everyone can upload a file. This kind of over-convenience will lead to piles of spam files, for there is no ask for permissions to group leaders.

For the last factor, QQ does not provide any similar functions, making summary after a meeting or a class impossible. Of course a leader can upload an outline as a file, and ask for a feedback as a discussion. Yet such information will soon be flushed away by loads of spam information.

In conclusion, QQ provides a reliable service in sharing files, but its drawbacks are also apparent. The freedom it provides causes big troubles in finding useful information. Unfortunately, such cases are common while using QQ, which will easily turn a discussing group into a chatting room, or a sharing platform into a messy net disk. All in all, QQ is not for formal or semi-formal discussion, but just for chatting.

3.2.2. Clicker

A clicker is a terminal device that can send signals to a certain receiver. The receiver, usually a computer, can then display the result on the screen. Unlike QQ, which has a vast variety of

different functions, the only function of this system is voting.

Clicker performs well in group discussions, for it can display the voting process during voting and the result after the voting is over. This means that a leader can have an instant view on the voting process. With a Clicker, a vote can become more directly. The terminal device, however, is so simple that it can provide choices only from 0 to 9. The voting process is strictly restricted due to this monotony. Moreover, the system can only support quick votes, like a little question in a class, or a decision on a meeting. Such system is also not proper for

However, the use of such system is also strictly restricted. Firstly, it does not provide any other additional functions, making it hard to be widely spread. Besides, the system relies on the terminal device to work, while the terminal device is easy to be forgotten or lost. In this case, the function of this system will be badly damaged. This is definitely what we do not want to see. What we need is a system with a higher reliability, at least everyone can access to this system regardless of place and condition.

Thus, clicker is clearly not a system we expected. Though it performs well in voting, it does not provide any other alternative functions. Depending largely on hardware, it is low in poor in extensibility. Such restrictions make clicker less satisfying.

4. Proposed System

4.1 Introduction to the Proposed System

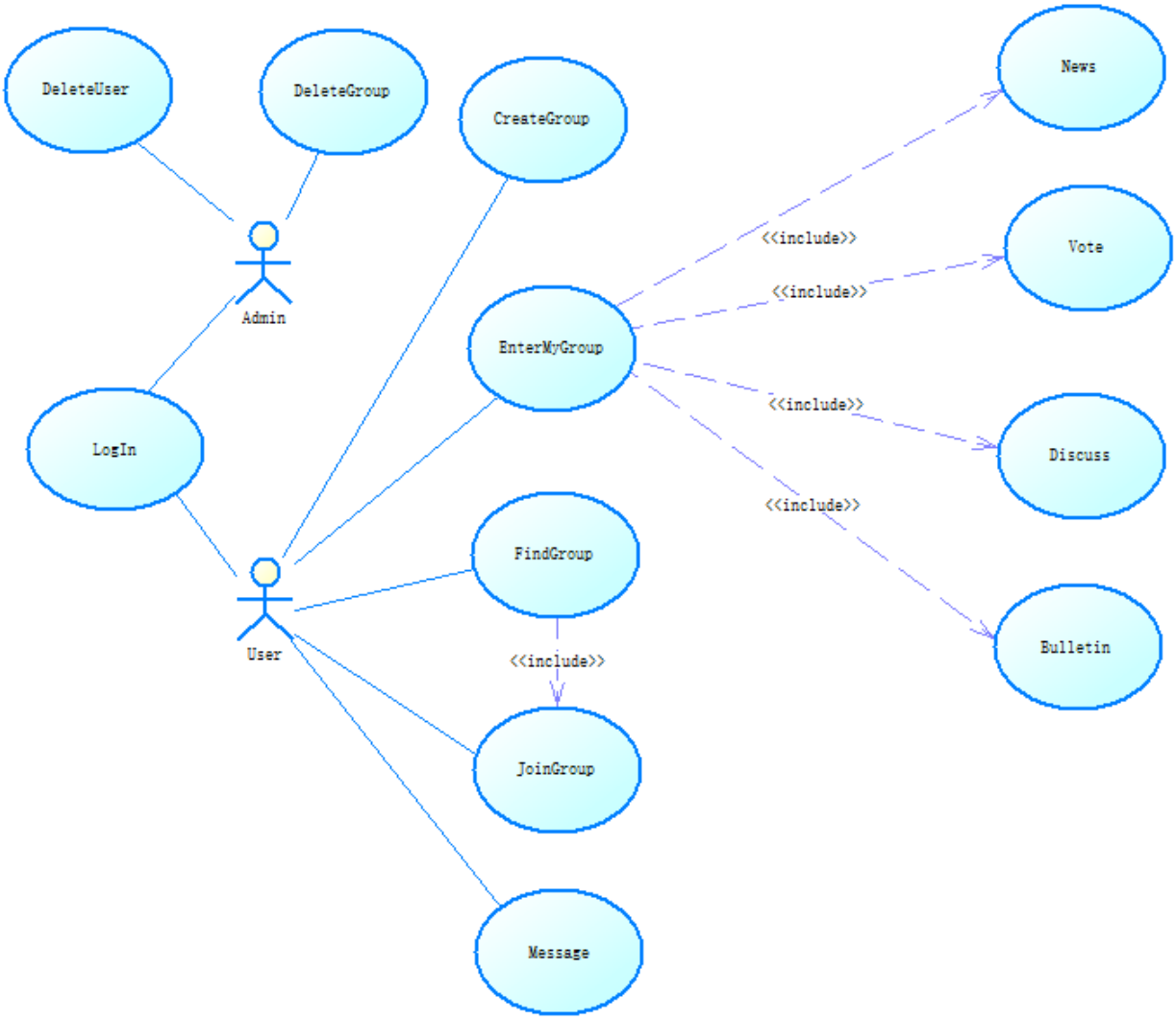
4.1.1 **Task Flow**

We will use Flask (A micro framework for Python based on Werkzeug, Jinja 2 and good intentions.) as the web frame of our system, and MySQL as the database.

First we will build a website by flask, which means we will implement the combination of the front-end development and back-end one and integrate the database into the system simultaneously .Then we will try to accomplish the functions on PC and mobile platform using the same server so as to achieve cross-platform and gain more portability.

4.1.2 **System Architecture**

The architecture of our system is as follows:



4.1.3 **Principle Sketch**

In our system, the user can either login by web browser or mobile APP since they share the same database. And by "post" method user can interact with the system to complete the operations he wants.

4.1.4 **System Function**

The functions we provided can be divided into two parts:

4.1.4.1 **The operations on the user itself.**

There are two types of users: normal user and admin. There are routine operations such as register, login, logout, edit profile, search other users and so on. And the admin on this basis can supervise any user, which means he can bereave somebody of posting for his

vulgarity and delete a group for its illegal activities.

The user can create a group (he then becomes the leader).And then he can invite other users. Others can also apply for entering by searching group via ID. This leads to the next function about the group.

4.1.4.2 **The operations of the group.**

The concept of user group is one of the differences between our system and other existing systems that use IP address or dynamic password to identify one's identity. The most essential function of a group is to raise a vote. The group leader can choose to start a quick-vote or attach some message to it such as class problem or background of the vote. The result of the vote will be displayed by one or a series of diagrams. Besides the leader can also put a bulletin to notify the users in his group and discuss with the group members on some questions thatare important components of our system as well.

4.1.4.3 **The interaction between users.**

We support functionality of the message operation. When the user does something in the group (create a discussion or the leader delete something), the system may generate a corresponding message to the user / the group.

4.2 **System Requirements.**

Server:

Python 2.7

-Flask

-MySQLdb

MySQL.

Client:

Any platform that can visit webpage.

Android 3.3+

IOS 7+.

As you can see, the user of our system needn't any extra equipment due to the portability and compaction of our system.

5. Alternative Solution

We have originally come up with some other solutions to realize the click. However, based on the feasibility and efficiency, we make the decision to give up those.

5.1 Connection

Actually, we initially didn't want to use sever to realize the communication between the leader and the common users and connect them directly. Thus, we thought of some other solutions to take the place of it.

One method to make it may be Bluetooth, and another is using Wi-Fi to connect the leader's smartphone.

Bluetooth has its limitation in distance other users can have accesses to the leader's phone. Bluetooth can also add burden to the leader's phone when it run the application and it is rather troublesome when we need to permit the connection to his phone from other users especially when it comes to a meeting or class concerned with plenty of participants. Moreover, Bluetooth is not stable enough. We abandoned it at first.

Wi-Fi can be quicker and stable. However, there are still some deficiencies compared to server.

	Server	Wi-Fi
Available Distance	Available anywhere where there is Internet	Available the scope that the Wi-Fi covers
Information received	All the useful information	Need the smartphone to calculate
Communication Between different OSes	Easier to realize	More difficult
Convenience	It all depends on the server to allocate the information	Need time to connect the target phone
Persistence	With account it can last pretty long if you want	The group would dismiss as soon as the Wi-Fi is disconnected
Burden to application	small	medium

5.2 Display

Sometimes we need to display the results on the screen related to the computer. Besides the solution that developing a website to realize it, we originally want to develop a PC application which is C/S software architecture. However, based on some essential parts, we discarded it.

	Web	PC application
difficulty	Middle	High
Compatibility on different OSes	High	
Convenience	High. For example, teachers can display the results on screen by using school's computers.	Low. It must be installed before we use it.
Download	On the web, it's easy for us to	Not easy to design the

	download files and we can take advantage of other software to download them.	downloading by ourselves and can be slow.

5.3 Conclusion

In conclusion, we can find the proposed solution is the most convenient and powerful one we can come up with. Our software develop group members have Java software, web and python developing experiences. Moreover, several of us are familiar with using MySQL to store data. We also choose GitHub to do teamwork.

6. Cost/Benefit Analysis

6.1Cost

Hardware Cost

Sever (at least one)

5 Personal Computers

Storage for the file users upload to share

Software

Python 2.7 extended with MySQLdb

MySQL

Eclipse extended with ADT

Sublime

Web Browser

GitHub

Environment

Make the reservation for meeting or programming together

Electricity bills about air-conditioning and so on

Human Resources

5 group members

Consultants concerned with the programming

Time Cost

Learning basic knowledge

Meeting

Programming

Debug

Thinking

LearningResources

Books

Search Engines (e.g. Google, Baidu)

Consulting consultants

Long Term

Sever maintenance

Database maintenance

Elevating compatibility

Upgrade version

Manage the accounts and database in the long run

6.2 Benefit

a) By using GitHub, we can make our teamwork easier to carry on and more efficient. As we know, GitHub is a web-based Git repository hosting service, which offers all of the distributed revision control and source code management (SCM) functionality of Git as well as adding its own features. That means it make work more closely.

b) By coding web instead of PC application, it can save us a lot of time and can display it more flexible on different terminals. Moreover, we also can save the money and time to improve the client software and maintain the infrastructure.

c) Use MySQL which is free save the money to employ other database or develop new database. Moreover, MySQL can be easily supported by python used as backstage language of the web.

d) Develop this system can make better use of our group's resource ---- different members are skilled in different areas.

e) Our product can be used widely and flexibly.

f) The experience of allocation can do lots of help to our further development of this application or even another application.Actually, a good allocation is important in the development of software which can keep most of the work from chaos.

g) The goals we aim at can exercise our capacities for its different functions covering many different

h) Discussing in group also makes us familiar with teamwork. We always need to negotiate on different ideas come up with by us and discuss their feasibilities. As a result, our decisions have been refined from varied aspects.

i) The new hardware device and software imported can be reused, and the knowledge we would learn in the project can be useful in the long run.

j) From some kind of degree, this project is also aiming at the communication among the team.

The information that flows when application is running is simple but efficient for the work of the team, like a class. In some aspects, the project itself can also help us with other work in the future.

k) In the beginning, we are not intended to charge customers on the application. If we can achieve success, we may charge them for them to upgrade some service or get some new service.

7. Other Social Factors

7.1Discipline Based Factors

When this system first came up in our minds, we are quite excited about this idea. However, lately a concern about class discipline popped up in my mind. As we provide a convenient system for users, they are as well allowed to use smartphones in class or meeting. So what if the user (referring to students or meeting participants here) cannot help playing games or chatting after the vote?

Actually this problem is not so hard to be solved. First of all, a piece of fact should be observed that, as the swift development of the high-tech, smart phones are being closely connected to our daily life. It would be a trend to have smart phone as an aid to our tutorial class or meeting, which we should actively follow and accept this upcoming trend instead of being recalcitrant to resist it. Secondly, there comes another piece of surprising fact that, the real trigger of playing games in class is their wandering mind instead of the information we provide. The part of user who keep concentrated would not be disturbed by this study-aid app. So the responsibility to study is left to the students. Finally, if the leader does care users' playing smart phones in class or meeting, we can provide a undisturbed option for leader to turn up. Then the user would not have access to any other apps.

7.2 Efficiency Based Factors

As for the efficiency, we should first consider a question: how to evaluate the system's efficiency? Or how can we do goods to the user? After considering a wide range of factors, we conclude that the efficiency can be shown in several aspects including: the enhanced knowledge a member can get, the convincing feedbacks a leader can have access to and a deeper interaction between leaders and members.

8. Conclusion

In this document, we raise a discussion on the feasibility of our proposed system, which is an aid for class and conference. From our observation of the existed system, we discovered several inconveniences in it. That discovery led us to the requirement for a new system, which is the application we are building. After careful examination of the pros and cons of our proposed system, we can draw the conclusion that, our proposal is reasonable, feasible and of high benefit. This confirmation gives us the motivation to complete this software system. Here we come!