- Homework no. 5 -

Elicitation document

1. Introduction

The goal of this document is to define detailed explanation of all the required functionalities, characteristics, needs and goals of the project: Video-conference system. Video-conference system will be web-based online platform which has the purpose of enabling the educational process of educational institutions be better and more efficient, creating new opportunities for the system.

2. Domain description

2.1. Vocabulary

SRS – Systems Requirements Software, this document which outlines the requirements that the software must fulfill. Entirely design independent.

GUI – graphical user interface

User – any person who uses the system, with the general case being students ages 18-24, and, teaching staff including professors, assistants, dean's office and guests (researchers, scientists)

UML – Unified Modeling Language.

OS – operating system

SIDE GUESTS - Researchers, scientists, and all sorts of teaching staff all over the world

2.2. Overall knowledge of the domain

We live in a modern world in which we have a very poweful tool that enables us to have an upgrade in every level and sector of society: technology. Amongst all the other things, the educational process is more optimized, more effective, and most importantly, more powerful. Creating a "Video-conference system" is essential for all the educational institutions, creating better stability and continuity in every

possible challenge that the world and society will have, allowing unlimited access of the necessary material to the students, but in the same time, creating new opportunities and freedom to the teaching staff for organizing the lecture, having more ways of displaying, explanation and clarification.

2.3. Environment and context

Videoconference System (VCS) will be designed for the "Faculty of Computer Science and Engineering" (FINKI) which is a part of the "Ss. Cyril and Methodius" University whose headquarters in Skopje. It already uses moodle system (courses) as a support tool for the learning process. The Faculty recognizes the importance of this system, because it provides a platform where the teaching materials are published to the students, and also the system provides opportunity for making examination of the students through the system. FINKI uses CAS (Central Authentication Service) system where the users (professors, assistants, students and the other staff members) may login in order to use some of the systems of the Faculty.

2.4. Domain model

FINKI recognizes the need for Videoconference System (VCS) that would provide opportunity to overcome the issues like attending online meetings and conferences with researchers and scientists all over the world, and even more importantly, continue serving the students with the required services while the classrooms can't work properly for whatever reason. That being said, the System needs to provide opportunities for giving lectures online, as well as having consultation hours with the students.

The same system could be also used by the Faculty for making various online meetings for its staff (for example meetings for the dean's administration, Teaching and research council, meetings for the institutes at the faculty etc.). Different types of users could be participants for the various types of meetings, as defined in law for higher education, the statutes of UKIM and FINKI.

1.1 Class diagram for the interaction between the main stakeholders in the system
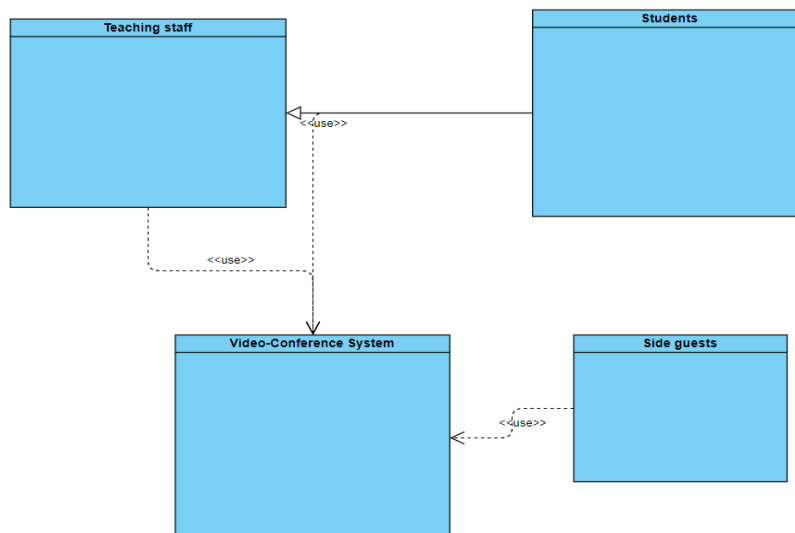
3. Initial description

We are living in a modern world where everyone is connected in one way or another with someone else. But the most amazing part is that the connection does not have any limits or boundaries. For example if you are from USA you can communicate with someone else living in Japan. This communication gives us a vast amount of time and money saving opportunities. Such as professors from around the world have the need to communicate with each other to share experience, work together in a project and for many more reasons. And sometimes when the traditional way of teaching method is interrupted, students and professors need to maintain the teaching process and communication over the Internet.

Thus, we identified the need of a communication system where the professors from FINKI (Faculty of Computer Science and Engineering) can correspond with researchers, other professors or scientists from around the world. Also, in some extraordinary conditions where the teaching process is interrupted, the professors and the students can maintain contacting themselves.

3.1. Stakeholders and their goals

- **Teaching staff (Professors, Assistants, Demonstrators)**
  ◦ The teaching staff have the purpose to create teaching sessions, explain the lecture using various methods that are implemented and to communicate with the students and get their feedback. Also to communicate with researchers and scientists from around the world.
- **Students**
  ◦ The students are responsible for attending at a given teaching session and to communicate with the professor. Such as asking questions about the lecture, giving their opinion, answering professor's questions, interacting with other students. Their main goal is to understand the new lecture.
- **Side guests (Researchers, Scientists)**
  ◦ The side guests are responsible for attending at a meeting with professors from the faculty. Their goal is to be interactive during the meeting, to share their knowledge and to give their opinion.

3.2. Description of the system range

The VCS is a web based teaching platform which is implemented only for the needs of FINKI. Only the teaching staff and students at FINKI are going to use this system and all of its capabilities. Also any other side guest that has the permission to use the system, can use it.
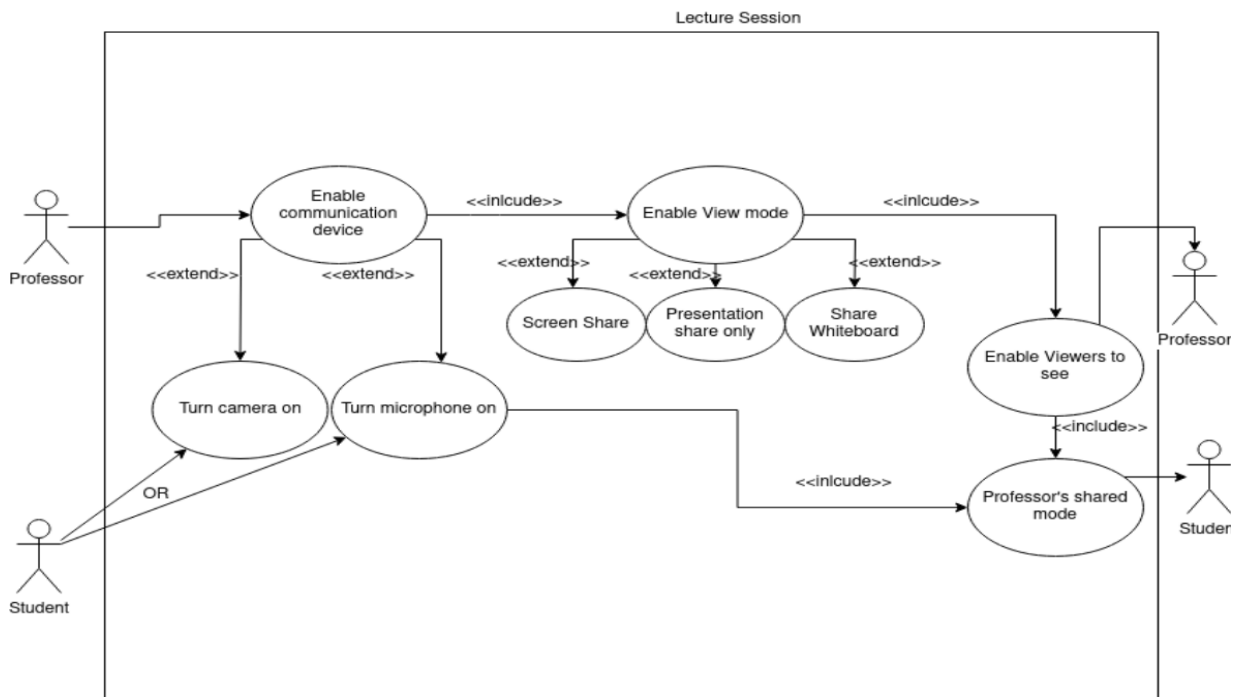
3.3. Main User Cases
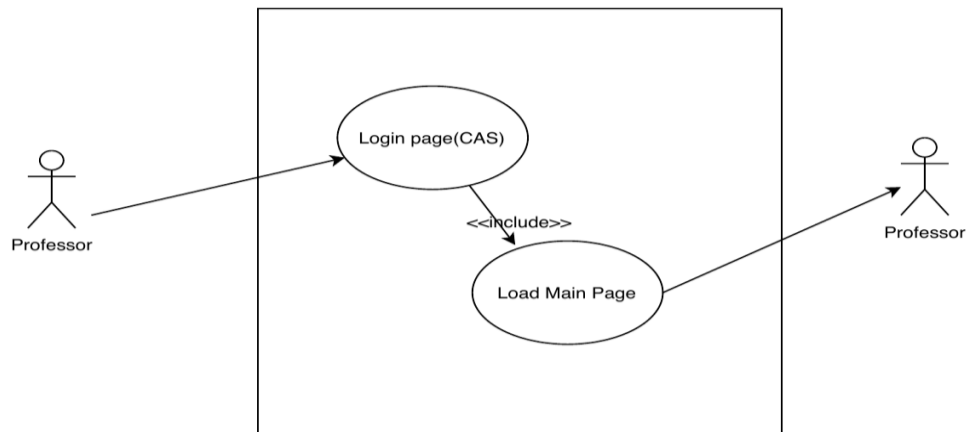
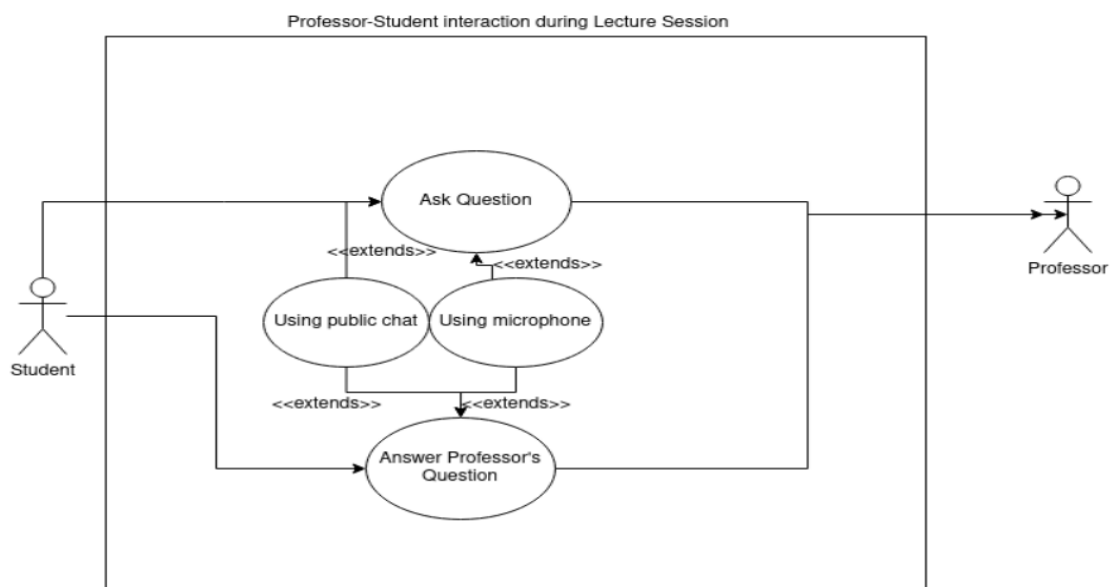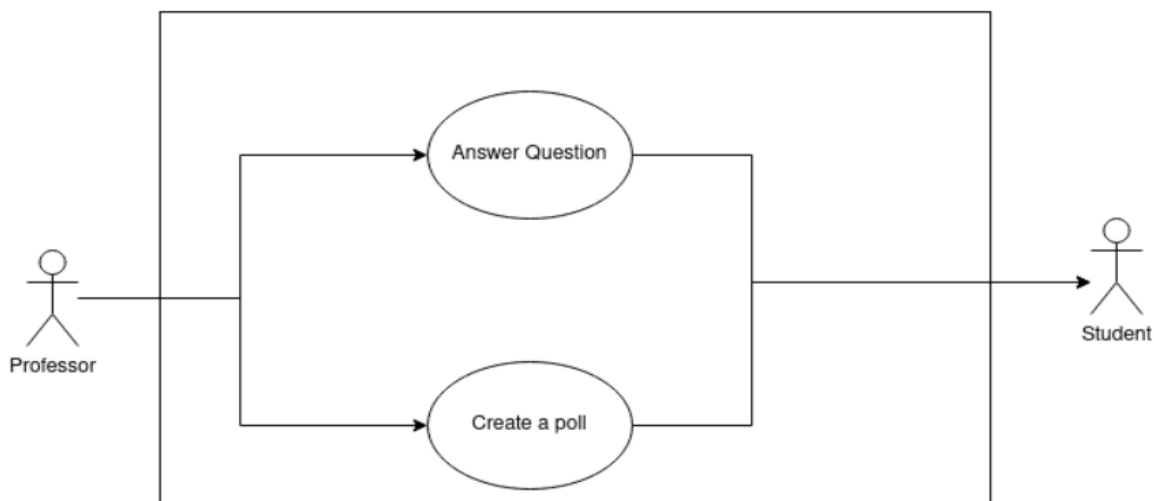1.2 UML Use Case diagram for Professor user type login.
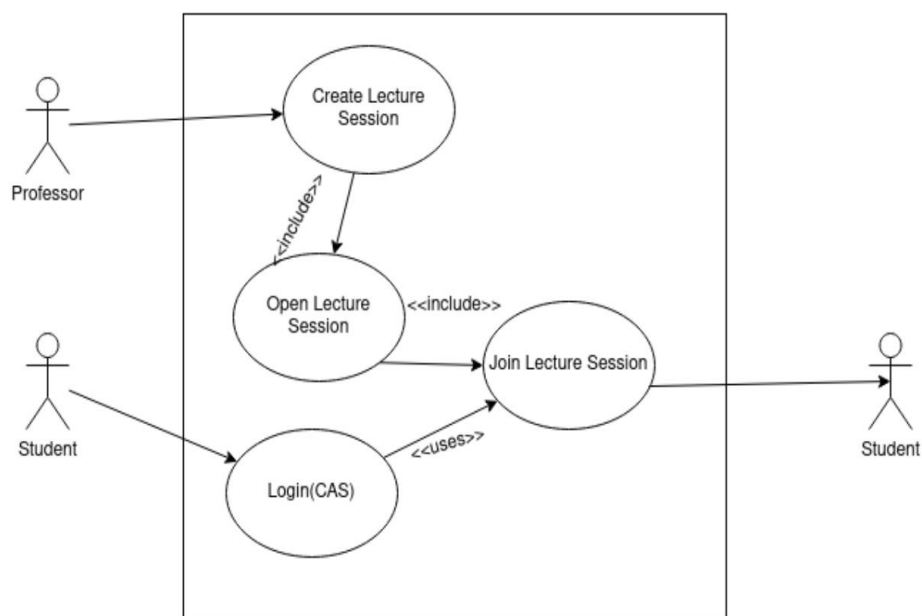
1.3 UML Use Case diagram for starting a Lecture Session. Lecture session is a session in which the professor can teach the students. The professor has the right to create this kind of session and later open it for students, who can join after they are signed in through the CAS system.

Lecture Session

1.4 UML Use Case diagram for Lecture Session. The professor is responsible for enabling communication devices, he can permit using either student's camera or student's microphone or both. Then, the professor enables which view mode should he share his screen with and what the students will see on their screens. At the end the students see the professor's view mode, it could be his whole screen or only the presentation or whiteboard on which the professor can do his job that he enabled before.

Professor-Student interaction during Lecture Session

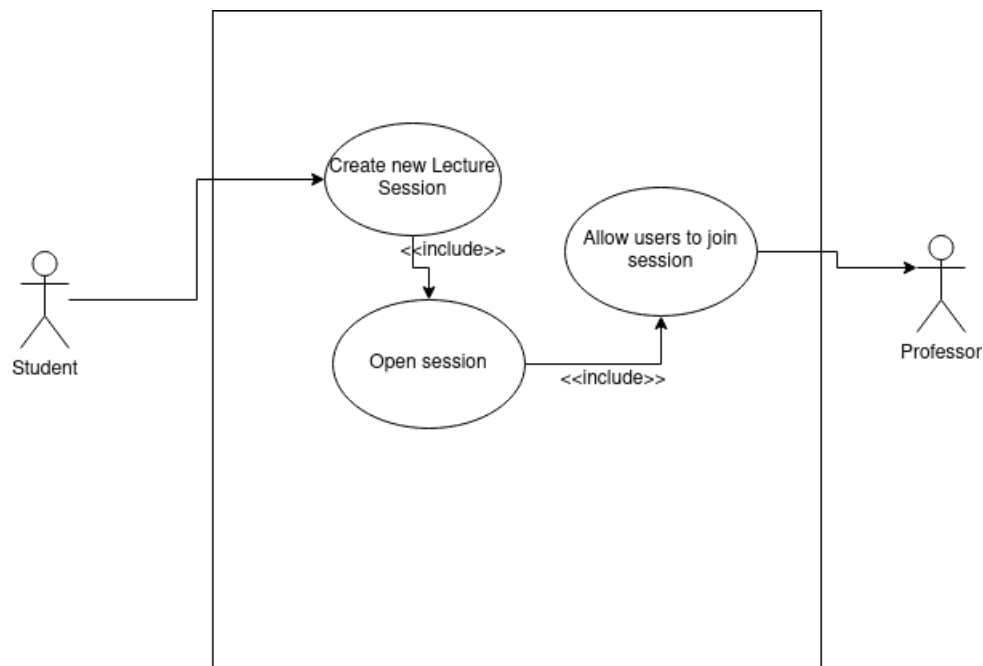1.5, 1.6 UML Use Case diagram for professor-student interaction during lecture session. The student can ask and answer professor's questions using microphone or public char, while the professor can create a poll and answer student questions.
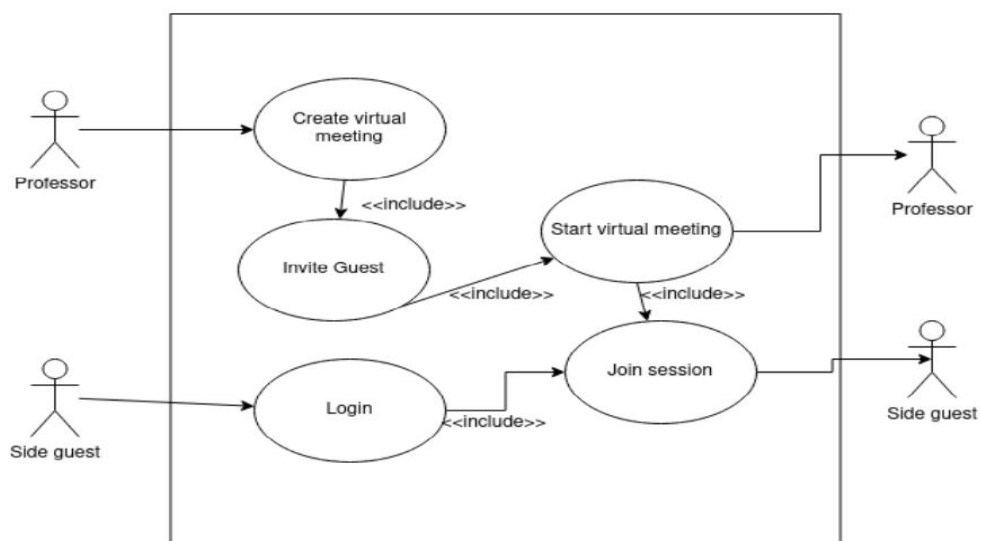
1.7 UML Use Case diagram for hosting a virtual meeting with researchers of scientists from around the world.

1.8 UML Use Case diagram where the student is attempting illegal operation.

3.4. Preliminary Requirements

Requirement ID	Requirement Statement	Level of Priority
RID001	The system shall be implemented on a server in the Central Macedonia region in order to reduce latency.	*Priority 1*
RID002	The system shall provide three types of user accounts: RID002.1 - Students RID002.2 - Administrators (Professors, Staff) RID002.3 - Guest users	*Priority 1*
RID003	The system shall not allow the users to create multiple accounts.	*Priority 1*

RID004	The system shall provide a privacy policy for each user account.	*Priority 1*
RID005	The system shall provide three different user interfaces: RID005.1 - Students RID005.2 - Administrators RID005.3 - Guest users	*Priority 1*
RID006	The system shall provide three conference types : RID006.1 - Lectures RID006.2 - Office hours RID006.3 – Meetings	*Priority 1*

RID007	The system shall allow the Administrator user to download the list of users who were present during the conference
	    RID007.1 The list shall contain the :
	
	      RID007.1.1 Date of the conference,
	
	      RID007.1.2 Name of the conference,
	
	      RID007.1.3 First Name of the user,
	
	      RID007.1.4 Last Name of the user,
	
	      RID007.1.5 User Index number,
	
	      RID007.1.6 The amount of minutes spent in the conference.
		Priority 1

RID008	The system shall allow the option to show or hide the sidebar with the list of present users during the conference.	*Priority 1*
RID009	The system shall allow the users to use the public chat during the conference.	*Priority 1*
RID010	The system shall allow every user the option to turn on/off their camera and microphone during the conference.	*Priority 1*

RID011	The system shall allow the Administrator the option to revoke any user's microphone privileges during the conference.	*Priority 1*
RID012	The system shall allow the Administrator the option to revoke any user's camera privileges during the conference.	*Priority 1*
RID013	The system shall allow the Administrator the option to share their screen during the conference.	*Priority 1*
RID014	The system shall allow the Administrator the option to record the conference.	*Priority 1*
RID015	The system shall not allow the users the option to download the recorded conferences.	*Priority 1*
RID016	The system shall allow the Administrator user the option to kick users during the conference.	*Priority 1*
RID017	The system shall allow the Students the option to ask a question during the conference.	*Priority 1*
RID018	The system shall allow the Students to create private conferences.	*Priority 1*
RID019	The system shall allow the user the option to view the conference in full-screen mode.	*Priority 1*
RID020	The system shall allow the Student the option to share their screen during office-hours conferences.	*Priority 1*
RID021	The system shall allow the Administrator to create polls during the conference.	*Priority 1*
RID022	The maximum amount of users in a conference should be the number of students the professor teaches the subject to.	*Priority 1*

3.5 Limits

3.5.1 Performance limits

- For every conference the maximum number of users should be capped at 250 users.
- For every lecture conference the maximum number of users should not exceed the number of the students the professor teaches the subject to.
- The conference host must have a minimum of 10 Mbps Download/3 Mbps Upload rate.
- The user attending the conference must have a minimum of 5 Mbps Download/1 Mbps Upload rate.

3.5.2 Software limits

- Web browser
- All camera, sound and microphone drivers must be installed and be up-to-date

3.5.3 Hardware limits

- Microphone and camera
- Keyboard and mouse
- Monitor or other video display device
- Internet connection
- 1.5GHz processor
- Speakers or other audio device

3.5.4 Acceptance limits
Before the software gets released, the developers must :

- Prove that all Priority 1 requirements are met
- Provide sufficient test cases to show that the system is complete and correct
- Demo the system and any features upon request

3.6. Risks

- Internet connection loss
- The host server is under maintenance or unavailable

4. Aspects of need for clarification

- *Server error occurred.*

    - Our VCS is going to be implemented on one main server which will be the weakest point of our system, thus we installed our system on a secondary server i.e. backup server which will continue working right after the main server crashes.

- *Side guest login.*

    - Our system will provide virtual meetings for professors from FINKI with other   professors, scientists or researchers from all over the world. But since our system is implemented only for students and professors from FINKI there is no CAS account for foreign users. Thus, we will implement temporary CAS account using their email for every foreign user which will last only for the duration of the meeting.

5. Review of the interview

- The goal of the interview was to ask the client about the main features of the system and in which way should they be executed.

- During the interview we managed to get a better idea of what our client wants from the system and how they want it to be done.

- Although, we didn't get a clear picture of how our client imagines some of the miscellaneous features of the system, because they were not too familiar with the system vocabulary.

6. Team description and roles

TEAM CONSISTS OF 3 MEMBERS:

Index and name	Task description	Percentage of work	Hours spent
181076 - NIKOLA STANOJKOVSKI	Accountable for writing the introduction and domain description of the document, also contributing for specifying and clarifying the requirements of the system.	33.3%	5
181104 - TASHKO PAVLOV	Responsible for taking notes during the interview, as well as for the UML Use Case diagrams for yet unpolished behavior of our system.	33.3%	7
181201 - EMIL PETROVSKI	Responsible for conducting the interview, forming the preliminary requirements, risks and limitations of the system.	33.3%	6

Appendix A: Notes from the interview

1. Do you have in mind any interface design of the system, or any ideas about it?

   -No, I have got no ideas at all

2. Should the interface design be any different for lectures, tutorials, office hours conferences from the design used for conferences used for online meetings?

- I don't see why it should be different

3. What means of communication should there be between the students and the professors?

   - Camera, Microphone, Chat

4. Would you like to view the current online users in the conference, if so, how do you imagine that?

   - I would simply like to have a list of the present users and later on if bonus points should be added for attendance that list should be reviewed. The list should have the names of   the students, the index number and how much time they spent in the conference.

5. Would you like to see all the users' names on your screen on a sidebar?

   - Yes, and I want an option to show and hide the sidebar.

6. During the conference would you like to view the users with their full name or the username?

   - During the conference they should have their full name, but later on in the list besides the name the index number should be displayed as well.

7. Should the users have a public chat?

   - Yes, if it helps with the interaction

8. Should the users be allowed to use a microphone and a camera?

- Yes, if it helps with the interaction. If someone is misbehaving then the administrator should have the option to disable their microphone and camera.

9. Would you like to grant permission for the users to use the microphone and camera?

- No, let them have that option by default

10. What other design details are important to you?

- Not that many, but rather every user should have one account only, multiple accounts shouldn't be allowed.

11. Should a scheduling feature for the conferences exist (Notifying the potential attendees some time before it starts)?

- Yes, if they have chosen to attend that lecture it would be useful

12. Would you like to have a full screen mode?

- Yes.

13. What is the minimum and maximum number of users allowed in a conference?

- Minimum 2 users so the conference has a point, maximum should be the number of students the professor teaches the subject to.

14. Should there be an option to record the conference?

- Yes.

15. Should users be allowed to download the recorded conferences?

- No