SAARLAND UNIVERSITY
COMPUTER SCIENCE

Human Computer Interaction
Wintersemester 2020/21
1. Dezember 2020

Group G606
Exercise Sheet -2

1 Who are the Users?

1.1 Identify as many stakeholders as possible. SUBMIT a list of stakeholders. For each stakeholder, state if they are a user, and explain in one sentence what it is that makes them a stakeholder.

Our list of stakeholders are as follows -

1. Students - the user that follow the lesson.
2. Professors - the user that conducts courses/lectures/records lectures.
3. Head of the Department - the user that incorporates feedback from students and professors to better handle/teach courses.
4. Purchase Committee - the group of users who are responsible for purchasing digital software (like i-Pad and Apple pencil etc)
5. Course Coordinator - the group of users who send mail and process enrollment the students into courses
6. Parents/Guardians - pay tax, contact teacher.
7. District Education Officer - responsible for running Ed-tech pilot programs to find the most optimal software tools for teaching.
8. Tech support - the user that set up and maintain the technical IT infrastructure Recording equipment - the user that knows about sound and video and green room etc for pre recorded lectures.
9. Student Representatives/Tutors - they are the students that talk with professors to improve the didacts
10. Academic Senate - they are the people that manage and choice the kind of didactics
11. Regional/State fund administrators - the user that give money/budget to university
12. Private donors/Alumni - that user that give money to school for gratitude.

Among these, we identify the following stakeholders as the users -

- **Students -** these are the primary users of the online learning application, who use it for listening to lectures and interacting with the instructors and peers.
- **Professor -** the professor/course instructor has to extensively interact with the application, to present his course material/lecture/evaluate presentations/review assignments.
- **District Education Officer-** the district educational officer along with a committee of staff/student representatives also fall under the umbrella of Users. They are responsible for running Ed-tech pilots to select most promising applications for teaching.

1.2 Creating Personas

In this section we synthesize personas that bear real-user characteristics that will ultimately help establish the requirements for the project. Our Personas are as follows -

1. Student.
2. Professor.
3. Course Coordinator.

Name : JonSmo Cluckwudgies **Job Title : Masters in Computer Science, Student**

Major Responsibilities :
1. Attend Lectures.
2. Complete Assignments and Projects.
3. Volunteer at Student Representative Council.

Demographics :
1. Age - 24
2. Gender - Male
3. Location - Hublscombe, Dhartroit
4. Enrolled as 1st Semester Masters Student.

Goals and Tasks :
1. Attend online lectures, even at odd times due to the time-zone issues.
2. Collaborate with peers for assignments using different online communication tools. The problem is finding a common time slot for everyone involved, since his team members belong to different courses/ time-zones etc.
3. Goals - Delve into Machine Learning research.

Environment :
1. Currently resides in Hublscombe, Dhartroit where nights are long and the years are short.
2. Poor Internet connectivity. Proficient in Linux/MacOS. Extensively uses Email and sometimes runs codes on Google Colab.
3. Chores at home prevent him from attending live lectures. Should watch recorded versions.

"The whole universe was created in under 3 minutes.
You have 24 hours. What are you going to do with it?"

Figure 1 Student

Name : Dr. Karen Zonkers Scheidegger **Job Title : Full time Professor**

Major Responsibilities :
1. Teaching.
2. Supervising PhD Students.
3. Research in Machine Learning.

Demographics :
1. Gender : Female
2. Age : 28
3. Marital Status : Single
4. Education : PhD in Computer Science
5. Hobbies : Reading Books and Gym

Goals and Tasks :
1. Research at the intersection of Machine Learning and Theoretical Physics.
2. Create a holistic lab environment for her students to engage in high quality research.
3. Deciding which courses should be offered for the term.
4. Reviewing course content with Teaching assistants.
5. Writing grant proposals.
6. Reviewing and supervising research projects.
   Writing research papers.

Environment :
She considers herself a tech geek dabbling in configuring various operating systems - Linux/ MacOS/Windows. System level administration. Proficient in computer programming. Extensively uses Emails, Internet surfing, Video communication softwares for online meeting with her students.

"All failed Physicists are now Machine learning Practitioners!"

Figure 2 Professor

Name : Inessa Ruga **Job Title : Student Co-ordinator**

Demographics :
1. **Gender : Female**
2. **Age : 30**
3. **Marital Status : Single**
4. **Education : Masters in Human resource management**
5. **Hobbies : Jogging and Volunteering at Pet shelters.**

Major Responsibilities :
1. **Coordinate with the students and designated professor.**
2. **Scheduling Classes.**

"What else do we have to schedule?"

Goals and Tasks :
1. **Helping students with the course enrolment.**
2. **Guiding with exam/course guidelines.**
3. **Manage the ECTS conversion and credits assignment to the students**
4. **Inform student, professor about news, general information and deadline**

Environment :
Proficient with Windows/MacOS.
Most of her work revolves around managing Calendars
Sending Emails.

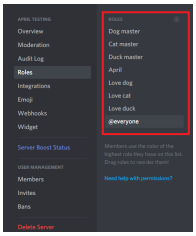
Figure 3 Student Coordinator

2 Understanding the user -

2.1 Observe the users. While we are currently not engaging with each other in person, we are interacting on Discord, Zoom, and Moodle. Many of these interactions leave traces. Take some time to observe how people are using these platforms. What types of behaviors do you observe? What happens when things work well? What problems do you notice? When do people engage?

1. Pretend that the only thing you know about this course is what you can read on Moodle and Discord. Pretend you know nothing else about the course. What do you observe? SUBMIT at least six descriptions of things you learned from how people engage with Moodle and Discord. For each item, explain how you learned this and provide a screenshot supporting your explanation.

   a) The users had to change to similar usernames on both Discord and Moodle to successfully register to a tutorial group.What if two or more people had the same names and Discord didn't let them change their Tags?



b) Even though there are different channels to address specific issues related to course registration, course content etc. It is easy to get buried under the debris of all the messages and its difficult finding the right information in minimal time.

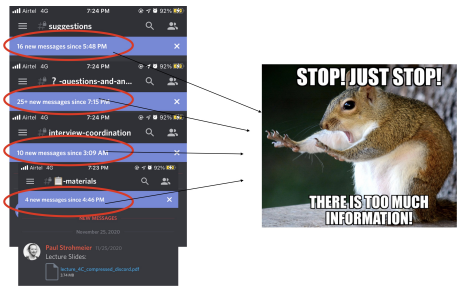


Figure 4 With too many active channels and participants. It is easy to get overwhelmed with the amount of information, discussion and lose track of the actual information a candidate is seeking.

c) Any new information presented on Moodle stays on Moodle. The users are asked to sign up on Moodle registering for the course and forming tutorial groups using institutional Email-IDs. But the platform doesn't send any new information via E-mail to any of the users. The users have to constantly check Moodle to stay updated.

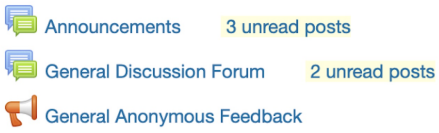


Figure 5 Users need to post their questions on multiple platforms to get response.

d) Low response rate to queries on General Forums - leaves the post creator helpless.

e) The dashboard of Moodle provides a plethora of information which can be overwhelming. What is the procedure for submitting the assignment? (Go to Grades to submit assignment). This is not readily apparent.

f) High latency when it comes to writing questions and seeking answers on Discord. That is, an average smartphone user types at 35WPM, the waiting period for seeking information is large. Problematic if the information that is being sought is time-sensitive. Like schedule for the class/assignment etc. For longer questions and answers, the character limit on discord is annoying for Users.

2. You do, however, know more about the course. For example, you have attended both live and pre-recorded Zoom sessions, and observed how people engage there. Based on other observations, your personal experi-

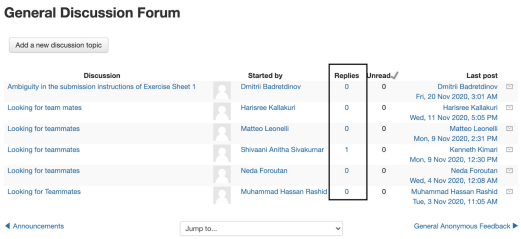


Figure 6 The Moodle platform is central for officially registering to the course and forming tutorial groups. But discussions initiated on Moodle often go unnoticed, since any new information posted on Moodle is not communicated to the User in any form.

Figure 7 The Moodle dashboard appears cluttered.

ence, the lectures, and any other form of non-text interaction, what else have you learned which is relevant? SUBMIT three descriptions of things you learned which were not apparent from text alone.

a) Since a pre-recorded lecture is streamed. There is no feedback/mechanism to ensure that the students are actually listening to lecture.

b) We observed that, even though platforms like Zoom and Discord provide voice/video feature, most people are comfortable using their chat instead of talking via their mics/webcam. This behavior could be attributed to technical issues like internet connectivity/ambient noise in the environment or in-general shyness/uncomfortable talking.

c) Even though the lectures are recorded and made available online, since the mode of course itself involves streaming pre-recorded lectures, the interaction between the professors/instructors is not available for students who rely completely on recorded lectures.

3. Consider how the two previous tasks are different from what you learned about user observations in lecture 3. What are the drawbacks of the methods suggested in the two previous questions? What do you not have access to? What remains hidden? SUBMIT three descriptions of problems with how you collected information in the previous two sub-tasks, and provide three things which remain hidden (a sentence for each is enough)

a) In on-line only mode of teaching via Zoom/Discord, the communication is impersonal, the general intent, tone and the general feel of the conversation is missing/hidden.

b) Even though the method allows for provision to re-watch the lectures at one's leisure. It is rife with technical issues like - Switching between Zoom for lecture and Discord for discussing queries. Hard to keep track of all the interactions/questions/answers.

c) The holistic and engaging experience a graduate school provides - networking opportunities, new collaborations etc is obscured by online-only mode.

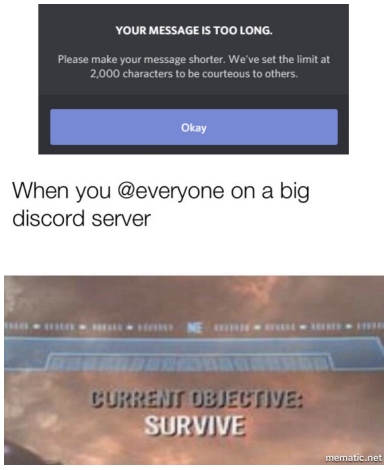
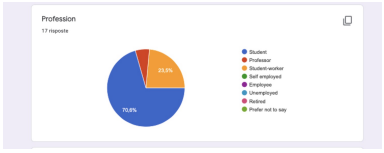


Figure 8 The Discord app enforces character limitations that prevents lengthy Q and A sessions.

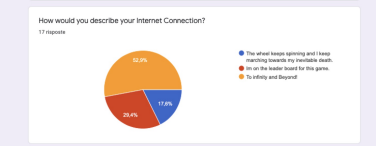
2.2 Prepare interview questions. Based on your observations, while especially considering the identified limitations, prepare questions for an interview. Use this interview to complement and extend what you learned through observation

1. **SUBMIT a list of demographic information you will collect with each interview. Provide at least one reason why this information is important.**
   We collected the following demographic information by circulating an online survey form. We believe these are important demographic information for establishing requirements for the following the reasons -
   - **Age Group-** To understand the degree of accessibility the application should support. For example, a veteran professor would expect a magnifying glass to zoom to content, voice-over etc.

   - **Profession-** To understand the different use cases of a proposed E-learning application. For example, a professor might use it to take lectures. A student uses it to listen to lectures etc.



- **Internet connectivity-** To understand, what subset of users can live stream the lectures and what subset of users would require a *Watch Later* feature.



2. **SUBMIT eight questions which will guide your semi-structured interview. Make sure that they are questions which enable discussion (so never something which can be answered with yes or no). For each question specify what phase of the interview it will be asked in.**
   - Please introduce yourself and walk-us through your regular routine work-wise - (Warmup) Demographic questions - Name, Age, Gender, Profession, Place of living (City, Suburb etc). How is your internet connection? It's a problem for you to follow online lessons? (Introduction)
   - Which platforms for distance learning do you usually use? What do you like and what don't you like about these platforms? (Main body)
   - How do you consider the interaction with the teacher and with your classmates in virtual lessons and in group work?(Main body)
   - Is it easy for you to find the material of the lessons, timetables and news regarding the courses?(Main body)
   - How would you improve the distance learning services? Which features do you like the most and which ones shouldn't be missing?(Main body)
   - Have you ever had any problems with these platforms while using them? In case which ones and how do you think can be solved?(Cool-off)
   - How do you feel with the material and notifications? Do you have difficulty organizing and keeping track of course deadlines? (Main-body)
   - What are the pros and cons of virtual lessons in your opinion? What is lost with virtual lessons? (Closure)
3. **Conduct interviews with at least 3 stake-holders, each interview should take about 15 minutes.**

   a) **SUBMIT a list of participants, where each participant is given a pseudonym and present demographic data.**

Name	Age	Gender	Profession	Country	HCI Group
PS	21	F	Student	India	G608
DV	21	M	Student	Italy	NA
LZ	24	F	Student-Worker	Russia	G104
MS	24	M	Student	Bangladesh	G505
LM	51	F	Teacher	Italy	NA
AB	24	F	Student	India	G1
NAz	__	F	Student	Virginia, USA	G104
Ju	27	M	Student	Germany	G509

b) **SUBMIT a summary of at least 5 key findings from all interviews (state for each finding which participant has raised this point)**

- Users like the possibility of being able to re-watch the lessons once they are finished but these must be loaded quickly without long waits. Users don't really like having multiple platforms where announcements, assignments and lessons are loaded because they have to continually visit them to stay updated.(MS-G505)
- Users do not really appreciate that there is not a single reference platform with all the courses they attend and their personalized timetable that reminds them of the lessons and the links through which to connect. Although the most used platforms make this task much easier by providing a simple link to click on to join the lesson immediately. (LZ-G104).
- Sometimes the Users feel, they are paying for an expensive streaming service rather than a holistic graduate school experience. (Ju-G509).
- Users feel the communication is impersonal. Difficult to find teammates online via these portals, who share similar objectives/goal, sometimes there is lack of synergy and assignments/projects/grades of everyone involved is at stake - (NAz-G104).
- There is no system that intimates the Users of new messages/deadlines/graded scores etc. (MS-G505).
- It is not possible to understand the level of attention of the class and there is little presence from the students especially with the webcam off (LM).
- There is limited scope for monitoring the progress of the students during exams/lectures to avoid copying in online platforms (LM).
- Screen sharing and material must not be missing, managing student deliverables in an intuitive way (for example not to receive them by email but in a single place where you can evaluate all the tasks / deliveries of the student) (LM)
- An important point for teaching and teamwork are the breakout rooms to make children work in groups (LM).

c) **Be interviewed. Each student should participate in at least one interview (no points, but required for submission. Bonus: Up to 3 points, one per additional interview)**.

i. SUBMIT the group number of each person that interviewed someone from your group.

- G505
- G104
- G509
- G608
- G104

ii. **Reflect on your experience of being interviewed. Did you enjoy it? Would you do things differently? Which questions did you feel comfortable with? Which were hard to respond to? (No need to submit anything in writing, but do think about it when being interviewed).**

Our group's common consensus after discussion was that - the interviews conducted were interesting allowing us to get to know our peers well. The personal questions about our routine and how we are coping with the online learning were comfortable. The difficult questions were mostly about what can be done to make the current applications better.

3 Extracting Requirements

Based on the interviews, consider how specifically your project will support students in studying during isolation (you may change this in your next assignment)

1. **Show how your project supports studying in isolation by means of two scenarios, each involving one persona created in task 1. SUBMIT these scenarios (at least 200 words, but no more than 500 words each).**

   - **Persona - Student** - The first scenario is for the student stakeholder who represents the majority of users of the service. The student will have access to an online platform or to a dedicated application which he/she can access with a university email. The user will see a dashboard with the list of all the courses they have enrolled in through the secretariat or by default for his course of study. By logging in to your account, you will then have the opportunity to see your class schedule in which the start and end of the lesson and the topics that will be covered will be specified. By clicking on the event, you can directly access the live session of the lesson or its registration if already finished.

     In each course there will be a tool that allows the student to collect notes regarding the lesson and divide them by topics or lessons as he prefers. In addition, he will be shown how on Moodle a page where there will be the various slides and the material used by the teacher during the various lessons.

     There will obviously also be a section dedicated to assigning and submitting tasks which will be highlighted if there is still some new task or that the student has not submitted to the server. This way the student will always have his homework situation under control.In addition, the system will have a system of alerts and notifications on the main page of each course, indicating the announcements not yet read and will send a copy to the student's email as soon as they are published. the student also has the possibility to raise his hand (everything will be ordered in order of arrival) to intervene in the lesson, or ask questions in chat to the class or teacher.

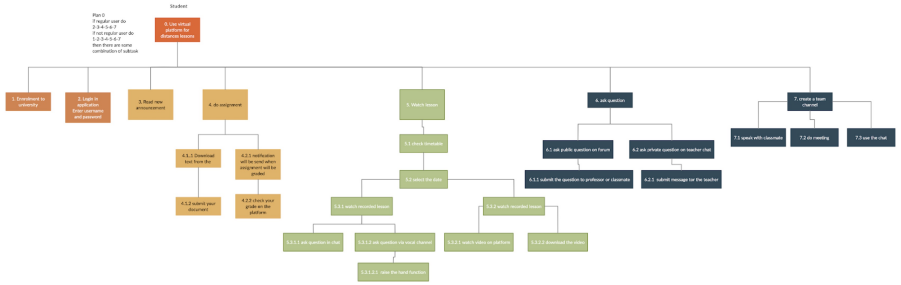
     The student can create an announcement in the forum section or directly contact the teacher on the app. The student can create a group if allowed by the teacher and work in a team. They can create their personal channel and private virtual room with a private chat to speak and enable the video in team and complete the team assignment.

     The message in chat during the lesson will not delete. The student have the chance to what the lesson from the application or download it to see when he want in case of internet connection problems. A mockup design is shown in Figure 9 and 10.

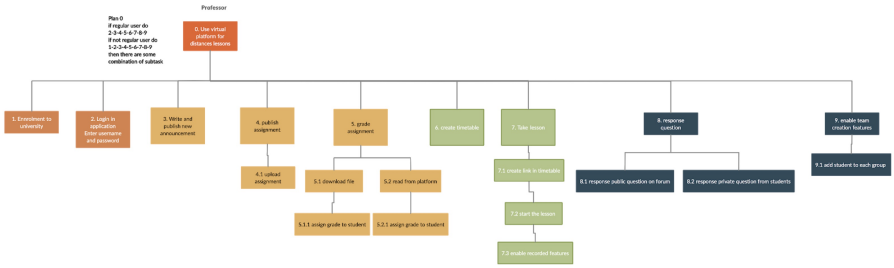
   - **Persona- Professor** - The second scenario we take into consideration is the professors'/instructors' point of view. Since we interviewed one of them during our interviews. There is a general overlap between the points suggested by Students and Professors. The professor must have provisions to create the course, publish announcements, assign tasks, notify users and create the timetable and insert students in the course when needed and manage live and recording of the lectures The application should provide a method to export information directly to the calendar. The professor can directly schedule a class/assignment deadline by clicking on the calendar and setting the time and date. The calendar also includes a link of the lecture either Live or Recorded. The creation of the Live event will be simple, everything will be automatically managed by the system during the creation of the event / lesson on the calendar. The lesson will therefore begin only when the teacher accesses the link and starts the lesson while anyone with the link and an account with permissions can relate to the Live.The system will also allow the teacher to receive questions during the Live with a real time show of hands system that also tracks the order of arrival and notifies which students want to speak and in what order. Furthermore, the teacher can easily upload the material in the relevant section of the course page by drag and drop or by selecting files. The professor can receive messages on forums or in personal chat from students. The professor can enable the students to create groups to collaborate

in projects or assignments or tutorials and add it in different groups that will provide a chat, vocal channel and video too.

2. **For each scenario perform hierarchical task analysis (HTA).**
   - Student HTA -



   - Professor HTA -



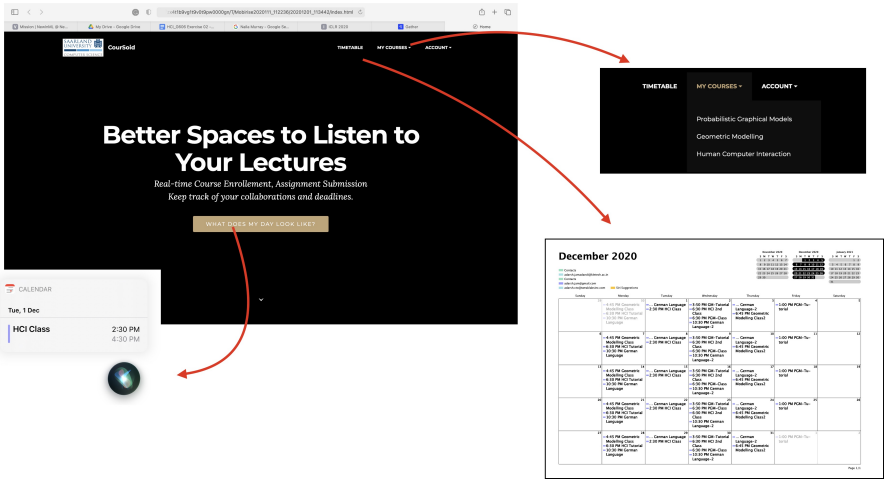


Figure 9 A mockup of the application which we tentatively call - the CourSoid-1

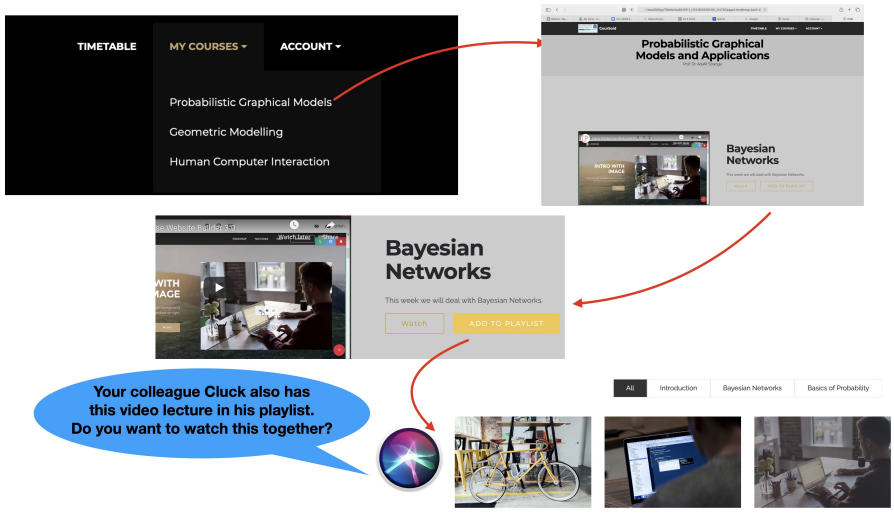


Figure 10 A mockup of the application which we tentatively call - the CourSoid - 2

4 Formulate requirements

Provide a list of requirements as described below (all three points should be addressed in a single list).
Using your gathered data and your analysis, identify and SUBMIT at least 10 requirements.
For each requirement also SUBMIT what type it is (functional, data, environmental, and user characteristics). There should be at least one from each category.
For each requirement also SUBMIT how important it is must-have, should-have and nice-to-have These are some of the requirements that we established through our own research, surveys and interviews from various stakeholders.

1. **Watch Later/Record Lectures - Functional/Must have** - Functional requirement which can assist students to re-watch lectures at their leisure.
2. **Recording should be available immediately- Data/Should have** - The recording of the lecture should be available immediately as soon as the live lecture concludes. No manual upload by professor.
3. **Personalized Course Time Table - Data/User-characteristics/Should have.** - Feature to organize and keep track of courses enrolled, deadlines and lecture timings.
4. **Keeping track of Raised hands- Environment/Nice to have** - Feature to keep track of which student/user has raised his hand, in-case the professor doesn't like to be interrupted.
5. **Single Application for Multiple Courses- Functional/Must have** - A singular application that takes care of enrollment in multiple courses instead of using different applications for each course.
6. **Create private room for team work - (Must have)(User characteristics)** - The users can find teammates, work in teams for assignments.
7. **Important Updates communicated via E-mail - Functional/Nice to have** - Any new update posted on the application should be communicated via E-mail.
8. **Watch missed lectures together with colleagues - Functional/Nice to have** - Feature to watch missed lectures together with colleagues based on individual availability by sharing lecture playlists depending on the liberty to share the content.

9. **Platform Agnostic - Linux/Windows/MacOS/Browser- Environment** - The application should be platform agnostic and should run on multiple software environments.
10. **Create virtual avatars and virtual workspace for collaboration/lectures - Environment/Nice to have.** - To make everyday interaction more interesting, the users can be allowed to create virtual avatars for interactions.