



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

DESIGN THINKING

CHAPTER 8: COMMUNICATION & NETWORKS

SECP1513 – SECTION 09

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Subject:

Technology & Information System

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INTRODUCTION

Design thinking is a non-linear, iterative process that teams use to understand users, challenge assumptions, redefine problems and create innovative strategies and solutions to make a prototype and consult test for the project that has been made. It encourages organizations to focus on the people they're creating for, which leads to better products, services, and internal processes. Design thinking is important to develop and refine skills to understand and address rapid changes in users' environments and behaviors. It helps us observe and develop empathy with the target user. Design Thinking is extremely useful in tackling problems that are ill-defined or unknown, by re-framing the problem in human-centric ways, creating many ideas in brainstorming sessions, and adopting a hands-on approach in prototyping and testing. Design Thinking also involves ongoing experimentation: sketching, prototyping, testing, and trying out concepts and ideas.

There are five phases of design thinking:

- Empathize - Research users' needs
- Define - State your users' needs and problems
- Ideate - Challenge assumptions and create ideas
- Prototype - Start to create solutions
- Test - Try your solutions out

Detail Steps Of Design Thinking

DATE	DESCRIPTION
2 November 2020	Meet up for group discussion <ul style="list-style-type: none"> - Plan on who will be interviewed - Discuss the question that should ask for the interview
3 November 2020	Interview lecturers <ul style="list-style-type: none"> - Dr. Mohd Zahari - Mr. Aris - Dr. Nik kamal Izzudin Asking about problem and opinion in getting good communication and networking
4 November 2020	Meet up for group discussion <ul style="list-style-type: none"> - Discussion about the response from our lecturers that we interviewed - Give a duty for the video presentation for each member
5 November 2020	Meet up for group discussion <ul style="list-style-type: none"> - Plan on making report, slide, and prototype - Give a duty for each member
6 November 2020	Processing to make the report, video design thinking, slide and prototype
7 November 2020	Publicize the Google form of Survey on Online Conferencing Software
8 November 2020	Search for more ideas based on the survey's responses to make the report and video. Double checked the video to prevent spelling error and make some additional, and improvement.
9 November 2020	Collect the tasks given to each of the groupmate and compile all of it.
10 November 2020	Ready to submit.

Detail Description of the Design Thinking

Recently due to MCO we can not go to school classes can only use some video conference apps at home online classes. We compared four frequently used video conferencing apps and see which app is a good choice for which business situation. These apps all have the standard features for video conferencing, online meetings and are therefore in the spotlight these days. There are some differences in terms of interface, ease of use, functionality and price. We will list these characteristics below.

	Price(p/m)	Meeting participants	Meeting recording	Free version available	Screen-sharing	Whiteboard
Google MEET	\$6	100	YES	YES	YES	NO
Cisco Webex	\$13.5	200	YES	YES	YES	YES
Zoom	414.99	100	YES	YES	YES	YES
Microsoft TEAMS	\$5	250	YES	YES (Limited time only)	YES	YES

	Advantages	Disadvantages
Zoom	<ol style="list-style-type: none"> 1. Interface operation is easy to join the teaching assistant tools 2. Breakout Room: Can be divided into 50 meetings 3. Report features: Degree Analysis supports third-party software and Learning 	<ol style="list-style-type: none"> 1. Free version of Zoom is limited to 40 minutes 2. Shadows cannot be found in Breakout room

	Management System	
Cisco Webex	<ol style="list-style-type: none"> 1. Free version of the time extended to 50 minutes 2. Connecting to the mainstream learning management systems (LMS) 3. The security system and teaching assistants are well developed 	<ol style="list-style-type: none"> 1. Software that does not support Microsoft and G suite 2. The free version does not have the Breakout room feature
Google Meet	<ol style="list-style-type: none"> 1. Google Classroom can be connected to different features and stitched to Google Classroom 2. There is no time limit in the classroom 3. The Breakout room feature is turned on 	<ol style="list-style-type: none"> 1. There are geographical restrictions on cross-border children being affected 2. Over-reliance on Google Circles
Microsoft Teams	<ol style="list-style-type: none"> 1. No geographic restrictions to support the Learning Management System Platform (LMS) 2. Private communication functions: keep track of student progress and facilitate collaboration between schools 	<ol style="list-style-type: none"> 1. The free version does not have shadow classroom functionality 2. The ability to store documents is confusing

Conclusion

For companies using G Suite or Office 365, Google Meet and Microsoft Teams, respectively, are clearly the best choice. The functionality is not limited to video conferencing only, and there are no additional costs. On the other side of the playing field, you will find Zoom, where Zoom is currently not recommended for privacy reasons. If these problems are addressed, then Zoom really does have the most extensive functions. Approximately in the middle of the spectrum, we find Webex, which is not part of an office suite. It is, however, a good choice if your business is already using Cisco solutions. Moreover, expansion to Webex Teams is possible when more collaboration functions are needed.

ASSESSMENT POINT

The assessment point in this design thinking is for us to know about the details behind every step and progress in design thinking by conduct our project. We were also able to experience a new norm which is to do a group assignment virtually with our groupmates. We are also able to know what we must understand from this design thinking from the assessment point of different steps in design thinking.

During the transition between the design thinking steps

During the empathize step, we went to an interview with Dr. Nik Kamal Izzudin and Mr. Zahari through Google Meet and Webex. Every groupmate went to different meetings to get a different answer from different lecturers or staff because they will have their own point of view based on their respective fields. The problems we asked are about Communication and networks. From the interview, we were able to understand user problems better.

From the empathize phase, we were able to know about the problem that users especially students face about communication through virtual, so we have to identify the problems in define steps. During the define step, we discuss and try to understand all the problems, opinions, and suggestions that we collect from a survey that students face of online conferencing software.

After we defined the problems, we continue with the ideate step. With all the information that we collect and discussed during the empathize and define step. We can finally search for the solution by priorities the user's need and opinion in improving the online conferencing software. Moreover, we picked some of the good solutions and ideas so that we can solve the user problems successfully.

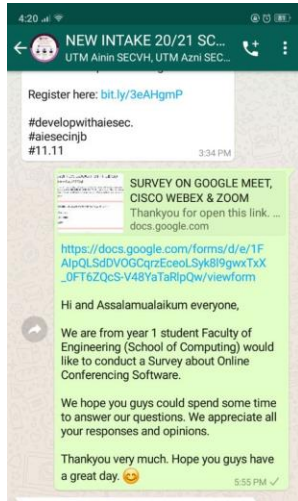
At last, we did the prototype of online conferencing software with more user friendly, free, high security, convenient with advanced features, and save student's data. This prototype can satisfy the students and also lecturers every time they do a meeting because this new online conferencing software fulfills all the student's suggestions about the current online conferencing software.

During the end of the project demonstration

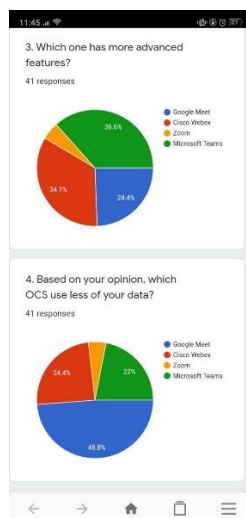
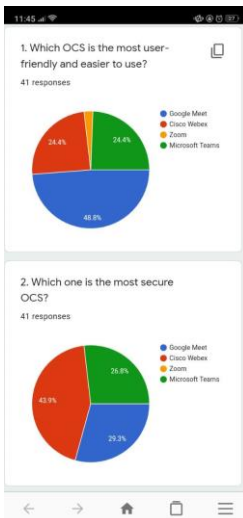
During the end of our design thinking demonstration, this design thinking lets us know about the problems of online conferencing software that is faced by the users. Besides, we know how to solve the problems of users by using design thinking. We learn about the importance of design thinking for us to think about the solutions to the problem and how to do the prototype to perform our project.

DESIGN THINKING EVIDENCES

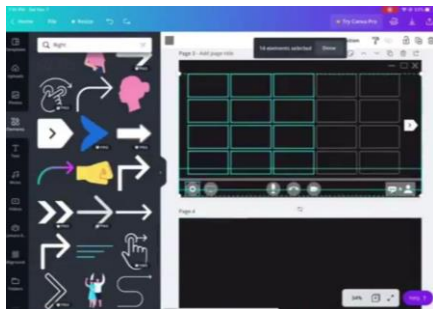
EMPATHIZE



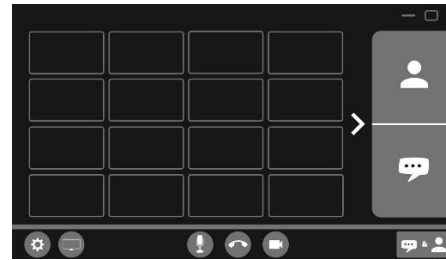
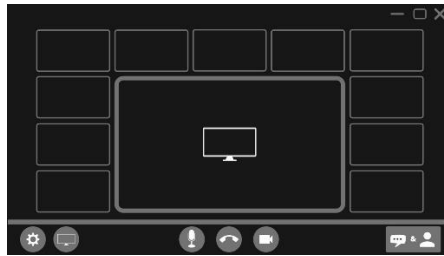
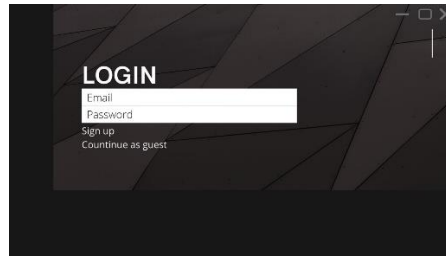
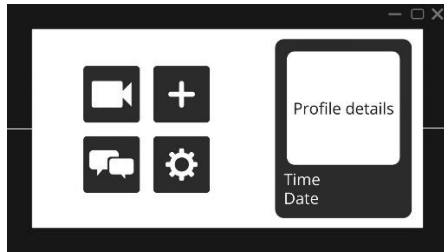
DEFINE



IDEATE



PROTOTYPE



STEPS IN DESIGN THINKING

STEP 1: EMPHATY

In this phase, we interviewed Dr of UTM, who told us about some knowledge of the communications and networks. Then we did a survey about Operational Control System(OCS), for example, Google Meet, Cisco Webex, Zoom and Microsoft Teams . Here are some of the questions and answers we've got.

QUESTIONS: What is Networking and Communication?

ANSWER: Data communications refers to the transmission of this digital data between two or more computers and a computer network or data network is a telecommunications network that allows computers to exchange data. The physical connection between networked computing devices is established using either cable media or wireless media. The best-known computer network is the Internet.

QUESTIONS: Which OCS do we prefer to use when we study and work at home?

ANSWERS: Of course, Google Meet, Cisco Webex, Zoom, Microsoft Teams aren't the only companies competing in this space – far from it. There are a number of well-established providers that have been offering video-conferencing software for years, with equally rich feature sets. But each of their advantages and disadvantages are different, we can according to their own needs to choose the right one to use.

QUESTIONS: What to consider when selecting an OCS?

ANSWERS: Firstly, price should by no means be the defining factor in your decision, but it's a good place to start. Next, Number of participants. Needless to say, any video-conferencing platform should have the capability to support the size of your workforce. Finally, Meeting recordings. The ability to record meetings can be useful for reviewing notes and making sure that any key takeaways aren't missed. This is only part of the consideration, and of course there are others.

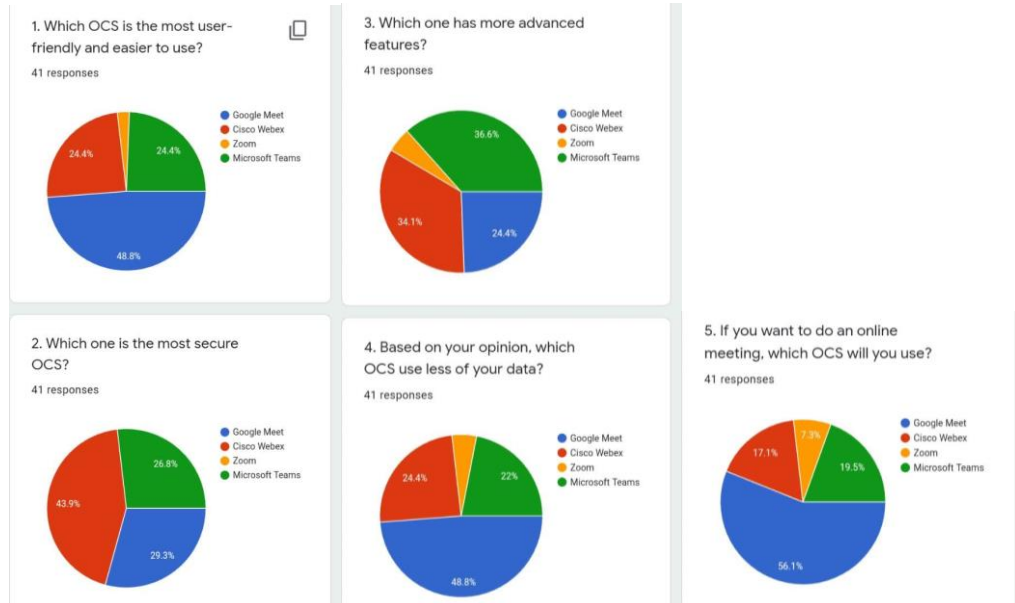
QUESTIONS: What is the need for OCS in our study and work?

ANSWERS: Simple can start quickly, can limit the meeting staff, the speakers can control the meeting process, share documents and be able to annotation discussions, can share multiple pages together and so on.

QUESTIONS: Which OCS is the most user-friendly and easier to use?

ANSWERS: According to our survey, near-average people (48.8 %) thought Google Meet was simpler, while only 2.4% preferred Zoom. The number of people who think Cisco Webex and Microsoft Teams user-friendly are the same is 24.4%. In general, most OCS operations are relatively simple from our survey.

STEP 2: DEFINE



The list of define and problems that comes from empathize.

1. Google Meet, Zoom, and Webex - all three video conferencing tools have a free plan, but with certain limitations. Where Google Meet offers a meeting time limit of sixty minutes for its free users, Zoom and Webex each offer 50 and 40 minutes of the time limit. This means that free users of these video conferencing solutions can't hold a conference for more than the stipulated meeting time limit. Furthermore, each of these tools offers a participant size limit of 100. Therefore, we think about some ideas to have video conferencing tools that has unlimited time and participant.
2. Zoom has recently been in the limelight for its security concerns. A lot of users reported security breaches and data theft issues. Zoom has been criticized for a range of privacy issues, including sending user data to Facebook, wrongly claiming the app had end-to-end encryption and allowing meeting hosts to track attendees. However, Zoom has released the 5.0 version to address such concerns and now uses AES 256-bit GCM encryption to enhance its security standards. Yet, the app is still seeing Zoombombing issues, which calls for more robust security features than the current one.
3. Microsoft Teams way ahead in terms of screen sharing with advanced features. Cisco meeting is great too but when it comes to screen sharing features, Microsoft Teams

certainly wins. Google Meet doesn't have any advanced functionality in terms of screen sharing hence it lags behind here. Microsoft Teams leads way ahead in terms of advanced features.

STEP 2: IDEATE

BRAINSTORMING PROCESS

Google Meet	Cisco Webex	Zoom	Microsoft Teams
Limited participates – 100 participates	Limited participates – 100 participates	Limited participates – 100 participates	Need to purchase
Meeting time duration of 60 minutes	Meeting time duration of 50 minutes	Meeting time duration of 40 minutes	-
Doesn't have any advanced functionality	-	Weak security	-

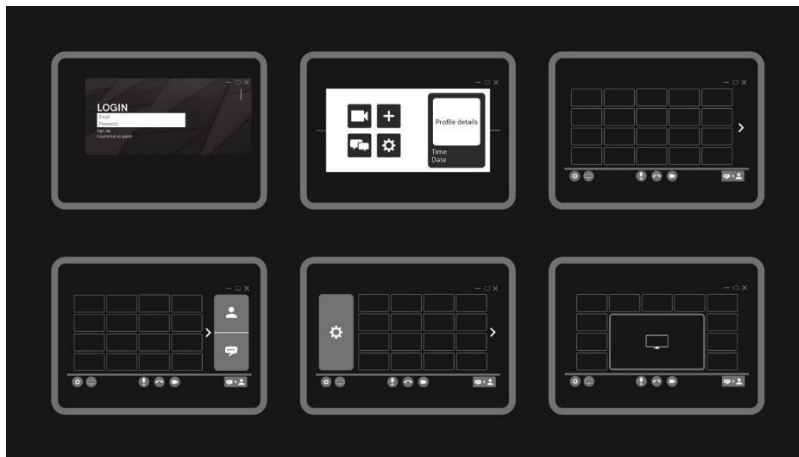
We observed the problems of the user in Google Meet, Cisco Webex, Zoom and Microsoft Teams. The above table shows the differences in terms of the number of participates, meeting time duration, security, and advanced features. Each of the video conferencing tools has its own problems and lacks. After we defined the problems, we explored the solutions to solve the problems and try to find new video conferencing tools that can solve all those problems.

We found out new video conferencing tools that can include unlimited participates and also having an unlimited meeting time duration with just using the free plan. Next, video conferencing tools should have a very secure meeting that protects user data by encrypting stored and shared content during meetings. All user's data is encrypted in transit by default between the software and client on both the web browser and iOS or Android apps. Recorded meetings are also stored as encrypted data.

Besides, the new video conferencing is super convenient and more user friendly as all the good and advanced features in Google Meet, Cisco Webex, Zoom and Microsoft Teams are upgraded and included in this new conferencing software. There are so many options when it

comes to sharing your devices' content such as a specific application, entire desktop, a portion of your screen, content from a second camera, whiteboard, device audio, etc. It is more convenient because anyone in the meeting can share a screen without having to request control and also can customize the video layout.

STEP 4: PROTOTYPE



Based on the solution that we found, this is the prototype for our project. We design it by using an app called Canva. We use a simple design so it can be easy to be seen and use. This design is for desktop and tablet versions. These are a screen shown when starting the app, the main screen of the app, and view while in a meeting.

REFLECTIONS

Design thinking is the best tool to solve a problems. It is teach us about online communication and network things. We got the idea from observing what people facing to when in online communication. Usually we using an app and do not know how it made, but know we learn how to make an app.

Nowdays people are using an app to interact, to search information, to communicate, and others. We made a survey for knowing what people need and their problem while using

an app. Based on the survey we know what people are expected for an app that will be develop in future. For example in term of usage, feature, quality, and so on. Because of this we hope to develop an app that what people are expected to be made. From that we made a prototype that show how the app design will looks like.

In future we will learn more about the online communication and network in technology and information system course. Being more active in doing research, and finding more resource not just from this course, can be from seminar or people that professional in this field.

TASK OF EVERY MEMBER

Name	Duty
AMIRAH BINTI ZULKIFLI	Video editor for the design thinking video, Make report for design thinking, Make slide for video chapter presentation, Make the google form for the Survey of Online Conferencing Software.
MUHAMMAD SYAFIQ AKBAR	Make prototype for design thinking, Make report for design thinking, Make slide for video chapter presentation.
GUO XU	The interviewer for the meeting with Dr, Make report for design thinking, Make slide for video chapter presentation.