CptS 443/543 Early Data Gathering Report

Rusu Wu, Jianqiao Liu, Wen-Chih Li, Parikshit Panwar, Yi Yao, Jinyang Ruan

03/22/2021

Abstract

In this report, in order to design a usable working assistance platform, we conducted five contextual inquiries to explore the demands in real work environment. According to the results of the contextual inquiries, most of the companies or institutions do not have an effective way to check attendance. Also, there is a strong demand of a platform that can ask for leave or break according to the participants. Moreover, mission calendar, real-time attendance report, group communication box and task scheduling assistant are seen as useful tools for a working platform by the participants. Based on the contextual inquiries, there is not a such software that integrates attendance checking and some common office functions such as assigning tasks, which makes it more meaningful for us to design a such working assistance platform.

Design project focus and research questions

We will design a high-fidelity prototype of this working assistance platform app which means that we will design some possible interfaces for the platform, there could be some interactions between interfaces.

a. The problem the software aims to address.

We aim to provide a tech solution for company employees and managers, giving them a working assistance platform app, which can be used in working fields to check in/out, check employee attendance, ask for leave or business trip, create and join a working group to cooperate.

b. Related products or technologies that address the problem & Proposed software solution description.

Check in/out.

Figure 1 Use ID card & fingerprint to check in/out.

One of the problems is that the old formation for employees to check in/out is based on ID card or fingerprint [1]. However, if there are many employees waiting to check in/out in front of the machine,

it will cause congestion and waste a lot of time. Thus, using an app to check in/out will save a lot of time and will improve employees' work efficiency.

Check employee attendance.

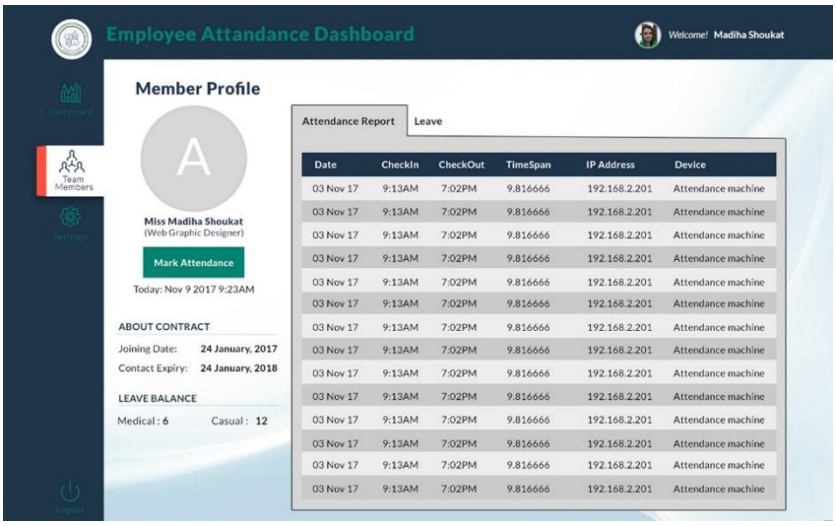

Figure 2 Check employee attendance

Old formation for company managers to check the attendance of employees is based on paper or desktop webpage [2]. And employees usually have no way to check their attendance. We want to integrate this function directly into the application.

Ask for leave or business trip.

Employees often use paper forms to ask managers for leave or business trips. It is slow and inconvenient. We would want to provide this feature on the app.

Create and join a working group to cooperate.

Many company employees conduct teamwork through face-to-face meetings. However, because of the COVID, it seems hard to achieve. On the other hand, during the cooperation, employees need to chat, share files and working progress, so, providing an app to integrate these functions and improve employees' work efficiency is quite necessary. We would want to provide these features on the app, including chat box and file sharing, etc.

c. Proposed software's prospective users.

The prospective users of our system are company employees and managers. Our target user group is mostly company workers aged 20-60.

d. The key research questions that the contextual inquiry set out to answer.

RQ1 Have you used a working platform or working assistance software or company management platform before?

RQ2 Which part/function of the working platform do you think is hard to use?

RQ3 What functions do you think are necessary for a working assistant software?
RQ4 How does your company assign tasks and then track and evaluate work progress?
RQ5 On a scale of 1 to 5, how useful the system will be? And why?
RQ6 What software does your company use for communication?

Participants

Participant 1 is a junior undergraduate student at The Chinese University of Hong Kong major in business. She is a tech-user for a long time, especially in the COVID pandemic time. When she is attending the class, her professor has been using a platform to receive their attendance.

Participant 2 is a first-year graduate student in Computer Science at Washington State University. Participant 2 is from Taiwan and identifies as male. He had an internship experience in the company before. During the internship, he had the experience of using the working assistance software or company management platform.

Participant 3 is a first-year graduate student in Electrical Engineering at Washington State University. Participant 3 is from Taiwan and identifies as male. He also had an internship experience in the company before. During the internship, he also had the experience of using the company management platform.

Participant 4 is a second-year graduate student in Electronical Engineering at Washington State University. He had a one-year internship in an IT related company after he graduated from undergraduate school. During this internship, he had the experience of using company management platform. In addition, his father also owns a company which also uses a company management platform, so he has relatively much experience of using company management platform.

Participant 5 is a senior product manager with 15 years of work experience in an Internet company. He has more than 10 years of experience in product research, design, and product operation. Has extensive experience in how to tap user needs and pain points.

Contextual Inquiry Sessions

Process and Environment

Because of the COVID-19, we can only study remotely at home. Thus, for participants 1, 2, 3, and 4, contextual inquiries are conducted through Zoom meeting in our respective homes.

On the evening of 3/14, we interviewed participants 1, 2, and 3 and conducted the contextual inquiries through Zoom meeting by Wen-Chih Li, Parikshit Panwar, and Jianqiao Liu. On the evening of 3/15, Jinyang Ruan interviewed participants 4 and conducted the contextual inquiries through Zoom

meeting.

For the contextual inquiries of participants 1, 2, and 3, our contextual review was conducted by three team members who each had a different role. One person was responsible for recording the interview through Zoom meeting, the second person for main note taking, and the third person was the main interviewer. During the contextual inquiry, we asked our participants some questions about their background, working experience and some evaluations of the working assistance system they used in their work. Each contextual inquiry approximately lasted 10-15 minutes depending on their elaboration in responses. To see the set of questions asked, see **Design project focus and research questions**.

For the contextual inquiries of participant 4, one of our teammates, Jinyang, physically met the participant first. Jinyang asked the participant for interviewing him. After Jinyang got the authorization, he simply introduced our project's topic and the purpose of the interview to the participant. Then he asked some background information about the participant and scheduled a time for online interview. Finally, Jinyang and participant 4 met through ZOOM on 3/15. For detailed questions and responses, please check **Appendix B: Raw data**.

For the contextual inquiries of participant 5, one of Yi Yao's friends, meeting at a restaurant named "Ju Bao Yuan". The survey begins right after we eaten hot pot. Due to the noisy environment, no audio or video was recorded. I used iPad to record all the Q&A content. After that, organize the notes into raw data.

Common Tasks and Themes

Because of the COVID-19 pandemic, we used Zoom meeting to interview our participants and conduct the contextual inquiries. When we were doing the contextual inquiry, one team member used Microsoft Word to write down the notes, one team member did the recording, and one team member asked questions and did the main interview.

The composition of the participants is one undergraduate student, three graduate students, and one product manager in a company. All of our participants have work experience, at least internship experience. One difficulty we encountered is that because of the COVID-19, we cannot find too many participants who are the current employees. But during the interview, we did not encounter difficulties and the process went smoothly.

Unique features of individual CI sessions

Check employee attendance.
Most of the participants pointed that they had no ways to check their attendance. And most of our participants is not consider their attendance rate when they are working or studying. We guess the one reason could be that they are all hard-working guys so that they did not have time considering their attendance rate. Thus, checking employee's attendance might be a necessary function in the app.

Calendar

Participant 1 told us that she thought calendar is a necessary function for a working assistant software. And she said it would be a good thing if there is a calendar which could integrate all schedules from other platforms.

Ask for break.

Participant 2 told us that he thought asking for break is a necessary function for a working assistant software. And he stated that if he cannot go to work because of an emergency, he needs a quick way to tell his situation to the boss.

Synthesis of findings

Requirements

Table 1. Functional Requirements and Associated Usability Targets

Functional Requirement	Associated Usability Target(s)	Empirical Source/Rationale
Users must be able to use the Working Assistance Platform APP to check in when he/she arrives at the company.	Users must be able to check in using the Working Assistance Platform APP in 2 seconds.	Most of the participants mentioned that they use ID cards to check in, and it is inconvenient.
Users must be able to view their attendance reports or statistics at any time they want.	Users must be able to view the attendance report in 30 seconds.	The participant noted that it will be helpful that they can view the check-in statistics of the day in real time.
Users must be able to update the new progress of their work.	Users must be able to update the new progress of their work in 30 seconds.	The participants suggested that designing a sub-function of reporting progress can reduce a considerable of tedious reporting progresses through phone call when having a work trip.
Users must be able to arrange meetings through breakout rooms with other users.	Users must be able to open or join a breakout room in 20 seconds.	The participants told us that breakout room is a useful tool for cooperation, and he rated a specific software with a high score because of the tool.

Users must be able to ask for leave or break using the platform regardless of time and location.	Users must be able to ask for leave or break in 20 seconds.	Most of the participants agreed that a attendance checking platform need a tool to ask for leave and break quickly because this can be more convenient than calling or writing a request.
Users must be able to report a feedback for their absence with the platform.	Users must be able to write a feedback for their absence with the platform in one minute.	Participants explained that when they had an absence, they could not report the reasons or the errors of the recoding to their managers since report time has passed for too long. Also, if employees find errors, they can orally talk to manager for correcting, which is inconvenient.
Users must be able to assign a new task to other users through the platform.	Users must be able to distribute a new task in 30 seconds.	The participant told us that managers usually assign a new task via email or oral assigning. The classification of email is not clear enough, so it will be easy to be ignored or missed. Also, assigning tasks orally lacks formal review, which would cause disturbing to employees once details have been forgotten.
Users must be able to check their scheduling calendar with the platform.	Users must be able to access their scheduling calendar in 5 second.	The participant hoped that there is a platform that integrates their tasks, meetings and so on in one schedule page, so they can easily arrange time for tasks.
Users must be able to communicate with other users with the platform.	Users must be able to open a chat box in 5 second.	Since daily communication via e-mail is too formal, participants suggested that a communication tool is needed in a working assistant platform.

Table 2. User Experience Requirements

User Experience Requirement	Empirical Source/Rationale
On a scale of 1 to 10, users must rate the app a 9 in terms of ease of checking in for work with the app.	Since checking is the core function of the platform, the usability score of the function should be high. Also, most of the participants companied that the attendance checking ways that they used to use are not convenient, so designing a checking platform that is easy to be used is necessary.
On a scale of 1 to 10, users must rate the feature of asking for leave as a 9 or higher in terms of convenience of use.	The participants were not satisfied with the convenience of the way they have used to ask for leave such as oral reporting or request reportion. In this case we need to race the convenience of use when we design the platform.
On a scale of 1 to 10, users must rate the feature of viewing attendance report as an 8 or higher in terms of the speed of updating.	Some participants were bothered by the fact that traditional attendance report is delayed, so they could not report the feedback in time. In the case, the updating speed of attendance report is crucial.
On a scale of 1 to 10, users must rate the feature of reporting new progress of tasks as an 8 or higher in terms of ease.	Participant 4 used troubled by the inconvenience of reporting progress of tasks because he always has work trips.
On a scale of 1 to 10, users must rate the feature of meeting room as an 8 or higher in terms of satisfaction.	Due to Covid-19, participants focus more on the usability of breakout room than before. Therefore, they view highly of the feature of meeting room function, so we need to raise the satisfaction score to ensure users to choose our platform.
On a scale of 1 to 10, users must rate the feature of scheduling calendar as an 8 or higher in terms of ease.	In the platform, scheduling calendar is like an information board, and participants would regard it as a useful tool when it is organized.
On a scale of 1 to 10, users must rate the feature of communication chat box as an 8 or higher in terms of ease.	The participants highly recommend that the designing platform should contents a chat box function. In order to provide convenience of chatting with other users, the platform should have a high score on the communication function.

On a scale of 1 to 10, users must rate the feature of reporting feedback for absence a as an 8 or higher in terms of satisfaction.	Some participants may though that the function of checking attendance report is to check whether they have been mis-recorded as absent. In this case, users hoped that they can have the chance to argue, so users must be satisfied with the feedback feature that the app provides.

Personas

Persona 1

 [3]	Jack Lee Japanese male 24 years old Computer science Graduate student Intern of a software company	Quote: "If I have an emergency, I can ask for a leave with the working assistance app very quickly."
User group	Company intern	
Goals	Ask for leave if some emergency happens.	
Pain points	Not being able to have a day off through any platform.	
His story	Jack is an intern of a software company that is a tech-user for a long time. The computer is a life for him every day. He needs a convenient app for him to ask a day off.	
Tech profile	Jack is very comfortable with technology; however, he has doubted that he will use this system often or not. He is always interested in applications or websites that could make his life easier, especially in the system that is collect his own records. Currently, he is used Line and Gmail to help him organize his life.	

Persona 2

	Shane Cutler American male 28 years old Software Engineer	Quote: “Working with my workmates is the best function in the working assistance platform.”
User group	Company employee	
Goals	To perform well and check his attendance, and work with his workmates.	
Pain points	Not being able to check his attendance and cannot work with his workmates because of the COVID-19.	
His story	Shane got a master’s degree in Computer Science, and he is employed in a tech company. In order to perform better attendance and make progress, he wants to have better tools for him to check his attendance and work with his workmates.	
Tech profile	Shane, being a tech person, uses technologies such as a laptop and mobile every day. He is very comfortable with using new technologies. He is familiar with some of the online attendance systems as he has used them in his company.	

Persona 3

	Lei Lee Chinese male 38 years old Company Manager in a software company	Quote: “Employees’ life is the most important thing I care about, using working assistance app can keep me close to them.”
User group	Company Manager	
Goals	Approve employee’s request.	
Pain points	Do not have a quick way to give employee permission.	
His story	Lei Lee is a big boy who is enthusiastic about designing novel and attractive products. His passion and inspiration for his work come from his hobby of travel and photography. He was tired of	

	living in the tall buildings in the big city. Whenever he had time, He would pick up his camera and go to the countryside. Where can he draw inspiration from the narrow stone road and the conversation with plain villagers. He always said that “the love of life, as well as careful excavation and observation of life, is the basis for developing good products.”
Tech profile	Lei Lee has extensive experience in product improvement. At the same time, he is also a user of various company internal application platforms. He has personally experienced the pain points caused by various usage scenarios in the office process. Can give suggestions for software improvement.

Scenarios

Scenario 1: Jack asks for a day off.

At the start of the week, Jack just wakes up and eating his breakfast. He is ready to go to the company. However, the door is broken. Jack cannot get out of his house. He needs to call the landlord immediately to help him with this situation. At the same time, he is going to be late if he plans to stay and wait for the landlord. He needs to either call his employer or use the platform to ask for a leave.

Jack's goal is to tell the employer that emergency things happen. He cannot be in the company on time. Also, he needs a day off to try to fix the door otherwise he will not be able to show in the office tomorrow either.

Recently, the company let employees use a new working assistance app. Jack opens the working assistance app that used by his company. He is going to tell his employer through this platform that something happens so that he cannot be in the office today. He opens the working assistance platform app, selects the “Leave” button. He then specifies what kind of leave, then mentions the details regarding his leave and submits it to his manager. He then gets a reply back from his manager that his leave has been granted. Then, the system marks in the calendar that Jack are not in the office today in order to let his colleagues notice it.

Scenario 2: Shane checks his attendance report and chats and works with his workmates.

Shane is a Software Engineer. He uses his technologies, such as a mobile and laptop, every day. He is an enthusiastic football player. After playing football, he usually goes for a swim in the evening to relax himself. Playing football and swimming are his hobbies. He says that these activities keep him fit and healthy. Shane wants to perform better at work, so he often reflects on himself. He always feels bad to be absent. However, sometimes he cannot control everything. And he cannot remember all reasons and detailed information of each absence. In this case, Shane wants to see his detailed monthly attendance reports so that he can summarize the reasons for his absence and reduce the number of absences in the future. Meanwhile, Shane cannot go to company because of the COVID, so

he wants an app to work with his workmates.

Shane's goal is to check his attendance report and chat and work with his workmates. Now, Shane's company uses a new working assistance app to take attendance of employees as well as allows employees to communicate and work with their managers.

It is Thursday afternoon, he is working at home because of the COVID as usual. Shane gets into the working assistance app and find the function "Employee Attendance Report". Now he can find reports for the past few months. Each report shows detailed information includes tardy time, absence date, tardy reason, absence reason, vacation leave. Shane can easily recall the reason that he was late or absent before. Also, Shane clicks on the calendar button provided, which opens up the calendar in which the dates are marked as green if the employee was present at that day, or else he/she was absent.

Then, Shane wants to work with his workmates. He opens the working assistance app and selects the "Chat" button. Then, he finds his working group and clicks it to open the chat box. In the chat box, he shares his work progress to his workmates by uploading some documents. Then, he clicks the "Meeting" button to start a meeting through the app. After the meeting, Shane and his workmates finish the project which started two weeks ago. In the past, this kind of project usually took three weeks to finish it, however, with the working assistance app, it only takes two weeks.

Scenario 3: Lei Lee approves employee's request.

As usual, Lei ate breakfast and went to the underground garage to drive to the company. Not surprisingly, the traffic situation in Beijing on Monday morning was very bad. Due to traffic jams, Zhang arrived at the company with only 10 minutes left before the company's prescribed working hours. It took him a long time to find a parking space in the company's garage. After parking the car, he dashed towards the main entrance of the company.

Now, Lei's company uses a new working assistance app to check in as well as allows employees to communicate and work with their workmates and allows manager to give permissions to employees' request. As soon as Lei got into the office, he opened the working assistance app, click "Check in" button to check in for work. "It is really convenient," he said. After signing in, he followed the crowd to the company elevator, ready to go to the office. At 10:30 in the morning, Lei convened all colleagues in the department to have a meeting. During the meeting, Lei told one of the employees Jack that the company needed Jack to negotiate cooperation with Tencent in Shenzhen.

Shortly after the meeting, Lei's cell phone reminded him that he had received a message from the working assistance app. He opened the working assistance app, clicked the "Permission" button, and found a request from Jack that he wanted a business trip. Then, Lei read the details of the request, and click "Agree" button to give the permission. Therefore, Jack got the permission to take a business trip to Shenzhen.

References:

[1] "3 modern business methods for clocking in and out," Designbump.com, 08-Nov-2017. [Online]. Available: https://designbump.com/3-modern-business-methods-for-clocking-in-and-out/. [Accessed: 22-Mar-2021].

[2] "Behance," Behance.net. [Online]. Available: https://www.behance.net/gallery/62527949/EMPLOYEE-ATTENDANCE-SYSTEM. [Accessed: 22-Mar-2021].

[3] Jack Lee - Google Search. (n.d.). Retrieved March 22, 2021, from Google.com website: https://www.google.com/search?q=jack+lee&safe=strict&sxsrf=ALeKk02gm5aEYUh-fCdYL_34TMycWSL74A:1616417512626&source=lnms&tbm=isch&sa=X&ved=2ahUKEwig5Je9-MPvAhWEGaYKHfyEC9gQ_AUoAXoECAEQAw&biw=1920&bih=937

Appendix A: Informed Consent

Informed Consent Agreement to Participate In
Contextual Inquiry

Rusu Wu, Jianqiao Liu, Wen-Chih Li, Parikshit Panwar, Yi Yao, Jinyang Ruan
School of Electrical Engineering and Computer Science
Washington State University

Description of Study: I understand that I, ____ **Tzu-chi WENG** _____ have been asked to participate in a contextual inquiry to inform the design of a new software application being created as part of the above persons' (henceforth, "the designers") course project for CptS 443/543 at Washington State University. My participation in this activity will help the designers to better understand the needs of prospective users of the software. I have been asked to spend about 20 minutes participating in this test. This will involve my engaging in answering questions while the designers observe, ask questions, and take notes.

[Include this section if you are doing audio recording.] The designers will record the session on audiotape. My

name will not be on the audiotape. When the researchers describe their work to other people in class (which may entail playing segments of the audiotape), they will not use my name.

Risks and Benefits Expected: The contextual inquiry will not do me any harm. It is not expected to help me directly. The results may help inform the design of the designers' software.

Confidentiality: I understand that any information about me that is obtained from this contextual inquiry, including what I say, will be confidential. My real name will be kept in a locked file and only the researchers will have access to it. Only my code name will be associated with data collected on me. Reports and presentations involving those data will not use my real name and will not present other data that could be used to identify me. Any recordings made within this contextual inquiry will be destroyed within two years.

Right to Refuse or End Participation: I understand that I may refuse to participate in this study or stop participating at any time.

Certification: I certify that I have read and that I understand the foregoing, that I have been given satisfactory answers to my inquiries concerning this contextual inquiry, and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time.

I herewith give my consent to participate in this activity with the understanding that such consent does not waive any of my legal rights, nor does it release the researchers or any agent thereof from liability for negligence. I understand that I shall remain anonymous in all written and verbal reports of this study. If I am recorded, I agree to allow the designers to present to their instructor and classmates excerpts of any recordings taken during the study for educational purposes. I understand that I may request a copy of this form to keep.

Signature of individual participant **Tzu-chi WENG** Date **03/14/2021**

(If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this activity, please contact Professor Christopher Hundhausen, Washington State University, 509-335-4590 or hundhaus@wsu.edu.)

Informed Consent Agreement to Participate In Contextual Inquiry

Rusu Wu, Jianqiao Liu, Wen-Chih Li, Parikshit Panwar, Yi Yao, Jinyang Ruan
School of Electrical Engineering and Computer Science
Washington State University

Description of Study: I understand that I, ____ Guang-Zheng Lee _____ have been asked to participate in a contextual inquiry to inform the design of a new software application being created as part of the above persons' (henceforth, "the designers") course project for CptS 443/543 at Washington State University. My participation in this activity will help the designers to better understand the needs of prospective users of the software. I have been asked to spend about 20 minutes participating in this test. This will involve my engaging in answering questions while the designers observe, ask questions, and take notes.

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Signature of individual participant **Guang-Zheng Lee** Date **03/14/2021**

(If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this activity, please contact Professor Christopher Hundhausen, Washington State University, 509-335-4590 or hundhaus@wsu.edu.)

Informed Consent Agreement to Participate In Contextual Inquiry

Rusu Wu, Jianqiao Liu, Wen-Chih Li, Parikshit Panwar, Yi Yao, Jinyang Ruan
School of Electrical Engineering and Computer Science
Washington State University

Description of Study: I understand that I, Hsuan-Yu Chen have been asked to participate in a contextual inquiry to inform the design of a new software application being created as part of the above persons' (henceforth, "the designers") course project for CptS 443/543 at Washington State University. My participation in this activity will help the designers to better understand the needs of prospective users of the software. I have been asked to spend about 20 minutes participating in this test. This will involve my engaging in answering questions while the designers observe, ask questions, and take notes.

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Risks and Benefits Expected: The contextual inquiry will not do me any harm. It is not expected to help me directly. The results may help inform the design of the designers' software.

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Signature of individual participant **Hsuan-Yu Chen** Date **03/14/2021**

(If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this activity, please contact Professor Christopher Hundhausen, Washington State University, 509-335-4590 or hundhaus@wsu.edu.)

Informed Consent Agreement to Participate In Contextual Inquiry

Rusu Wu, Jianqiao Liu, Wen-Chih Li, Parikshit Panwar, Yi Yao, Jinyang Ruan
School of Electrical Engineering and Computer Science
Washington State University

Description of Study: I understand that I, ___Wei-Lun Huang_____ have been asked to participate in a contextual inquiry to inform the design of a new software application being created as part of the above persons' (henceforth, "the designers") course project for CptS 443/543 at Washington State University. My participation in this activity will help the designers to better understand the needs of prospective users of the software. I have been asked to spend about 20 minutes participating in this test. This will involve my engaging in answering questions while the designers observe, ask questions, and take notes.

[Include this section if you are doing audio recording.] The designers will record the session on audiotape. My name will not be on the audiotape. When the researchers describe their work to other people in class (which may entail playing segments of the audiotape), they will not use my name.

Risks and Benefits Expected: The contextual inquiry will not do me any harm. It is not expected to help me directly. The results may help inform the design of the designers' software.

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Signature of individual participant **Wei-Lun Huang** Date **03/15/2021**

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School of Electrical Engineering and Computer Science
Washington State University

Description of Study: I understand that I, ___Shao-Liang Zhang_____ have been asked to participate in a contextual inquiry to inform the design of a new software application being created as part of the above persons' (henceforth, "the designers") course project for CptS 443/543 at Washington State University. My participation in this activity will help the designers to better understand the needs of prospective users of the software. I have been asked to spend about 20 minutes participating in this test. This will involve my engaging in answering questions while the designers observe, ask questions, and take notes.

[Include this section if you are doing audio recording.] The designers will record the session on audiotape. My name will not be on the audiotape. When the researchers describe their work to other people in class (which may entail playing segments of the audiotape), they will not use my name.

Risks and Benefits Expected: The contextual inquiry will not do me any harm. It is not expected to help me directly. The results may help inform the design of the designers' software.

Confidentiality: I understand that any information about me that is obtained from this contextual inquiry, including what I say, will be confidential. My real name will be kept in a locked file and only the researchers will have access to it. Only my code name will be associated with data collected on me. Reports and presentations involving those data will not use my real name and will not present other data that could be used to identify me. Any recordings made within this contextual inquiry will be destroyed within two years.

Right to Refuse or End Participation: I understand that I may refuse to participate in this study or stop participating at any time.

Certification: I certify that I have read and that I understand the foregoing, that I have been given satisfactory answers to my inquiries concerning this contextual inquiry, and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time.

I herewith give my consent to participate in this activity with the understanding that such consent does not waive any of my legal rights, nor does it release the researchers or any agent thereof from liability for negligence. I understand that I shall remain anonymous in all written and verbal reports of this study. If I am recorded, I agree to allow the designers to present to their instructor and classmates excerpts of any recordings taken during the study for educational purposes. I understand that I may request a copy of this form to keep.

Signature of individual participant **Shao-Liang Zhang** Date **03/09/2021**

(If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this activity, please contact Professor Christopher Hundhausen, Washington State University, 509-335-4590 or hundhaus@wsu.edu.)

Appendix B: Raw Data

Notes for Participant 1

Name: Tzu-chi WENG **Gender:** Female

Company: Chinese university of HK **Job: student**

Link: https://youtu.be/By6F_vEf_qA

Question	Answer
Do you often use cell phone or computer?	yes
Have you used a company management platform before?	Our professor uses Blackboard to check out attendance.
Which part/function do you think is hard to use?	I think it did not have a function for us to inform the professor.
What functions do you think are necessary for a working assistant software?	Calendar. Easy for integrating with each other platform.
Which software do you usually use for work communication?	WhatsApp and Zoom.
On a scale of 1 to 5, how useful the system will be? And why?	WhatsApp, not effective for working, too many messages. Rate 1.5 zoom. good, have breakout room. Rate 4

Notes for Participant 2

Name: Guang-Zheng Lee **Job:** First year Computer Science graduate student at WSU

Gender: Male **Work experience:** Have internship experience in a company

Link: https://youtu.be/g2Z-SAO2GOM

Question	Answer
What is your job right now?	Student
Do you often use cell phone or computer to do homework or watch videos? And you prefer cell phone or computer?	Yes, I prefer to use computer to visit the website, I think it is convenient for me.
Have you used a working platform or working assistance software or company management platform before?	No.
Will your professor use some system to track your attendance?	Yes, professor uses the Microsoft Teams survey to track my attendance.
Is it hard to use? Or which part/function do you think is hard to	I think it is easy to fill and submit.

use?	
Do you have ways to check attendance?	No way to check attendance, I do not care about that because I am sure I have attended all the classes so far.
If you are going to work in a company and you will use a working assistance software, what functions do you think are necessary for a working assistant software?	Ask for break, for instance, I cannot go to work, I need to talk to boss. Some functions can easily tell my situation to boss.
Which software do you usually use for work communication?	Line, Gmail, Zoom.
Based on Gmail, on a scale of 1 to 5, how useful the system will be? And why?	Gmail: 4, easy to use, it does not have too many problems, I think it has some issues that need to improve.
In your internship before, how did you check in for work?	I checked in before I got into the office. There was a machine near the front door, I would put the card in front of the machine to check in, it would record my time.

Notes for Participant 3

Name: Hsuan-Yu Chen **Job:** WSU Electrical Engineering MS degree **Gender:** Male

Work experience: Have internship experience in a company.

Link: https://youtu.be/gR8DqHDS1zM

Question	Answer
What is your job right now?	Student
Do you often use cell phone or computer?	Yes, definitely.
Have you track your attendance regarding to your study or work?	Professor uses pull questions in HCI class, other teachers let students answer questions. When I was working in the company, they used ID card to check in check out.
Is the check in check out online?	No, it used a real card.
Have you used a company management platform before?	Yes.
Can you describe a little bit?	Usually, we use it to do paperwork, and also used computer to check in, for instance, you will use the system to ask a request, and your manager will confirm your ask. If you face some problem, just talk to someone, manager will give you feedback, it is efficiency.
Which part/function of this platform do you think is hard to use?	No.
What functions do you think are necessary for a working assistant software?	Use touch ID or face ID, if possible, for tracking attendance.

Which software do you usually use for work communication?	Line, Zoom.
On a scale of 1 to 5, how useful the system will be? And why?	I would say 4. Because I think it is easy to use.

Notes for Participant 4

Name: Wei-Lun Huang **Job:** Second-year EE graduate student at WSU **Gender:** Male

Work experience: Have internship experience in a IT related company.

Link: https://youtu.be/VdhomkG_B4A

Question	**Answer**
Have you used a company management platform before?	Yes. it is a web site from company itself.
How does your company record attendance?	Each employee has one ID card for recording attendance. Once employees arrive or leave office, they are required to swipe ID card on a machine.
How to statistic everyone's attendance?	Professor uses pull questions in HCI class, other teachers let students answer questions. When I was working in the company, they used ID card to check in check out.
Is the check in check out online?	Employees cannot check themselves attendance but a monthly report from company website, only manager can check everyone's attendance.
What if there are errors in attendance statistics?	If employees find errors, they can orally talk to manager for correcting.
Can you describe a little bit?	Usually, we use it to do paperwork, and also used computer to check in, for instance, you will use the system to ask a request, and your manager will confirm your ask. If you face some problem, just talk to someone, manager will give you feedback, it is efficiency.
What software does your company use for communication?	We use social media for personal communication and use e-mail for formal inform.
Will you use communication software to communicate?	Sure, they are convenient.
Does the company support employees to use third-party apps for office work?	The company doesn't support but also doesn't ban any third-party apps.
How does your company assign tasks and then track and evaluate work progress?	Company assigns tasks only through e-mail or orally. We don't use a specific app for assign tasks or other actions.
If you can choose which of the following functions, do you most want a company management	A and B. Because these are the easiest functions. Other functions such

platform to have? why? (A. Attendance function; B. Ask for leave or business trip; C. Working cooperation; D. Communication platform; E. Work distribution and work progress query)	as work distribution may not be done perfectly only through a company management platform.

Notes for Participant 5

Name: Shao-Liang Zhang **Job:** Seiner Product Manager

Gender: Male **Work experience:** Lenovo, IBM, Baidu

Question	**Answer**
Have you used a company management platform before? 1. Yes 2. No	*"No."*
How does your company record attendance?	*"Each employee uses his own ID card to swipe his card on the attendance machine to register for attendance. Since each office building of the company only sets up a credit card machine at the entrance of the office building, if you arrive at the company late in the morning, you need to line up with many people to swipe your card to record attendance. Sometimes, because there are too many people waiting to swipe the card, it will be unable to register until the specified time, so the system will automatically record a late arrival, that may affect the salary of this month."*
How to statistic everyone's attendance?	*"The company has an attendance worker who exports the attendance data in the attendance machine from the back-end server at the end of each month, performs statistics and calculates attendance wages."*
What if there are errors in attendance statistics?	*"Before the final calculation of the attendance salary, the statistician will send the current month's attendance sheet to each employee for verification by email. If there is an error, you can give feedback to the statistician. However, generally speaking, if there is one or two errors, no feedback is given, because the time has passed for a long time, and it is difficult to provide evidence that you are not late that day. "*
Does the company equip every employee with office computers?	*"Yes. All work is done on the computer, so employees will be equipped with personal office computers after joining the company."*
What software does your company use for communication?	*"Most communication is via email. If there is an urgent need to communicate, we will call directly."*
Will you use communication	*"Sometimes I use WeChat to communicate with colleagues."*

software to communicate? (Such as WhatsApp, Team, WeChat, etc.)	
What made you give up using email or call directly, and choose to use WeChat to contact colleagues?	*"If you need to communicate with colleagues frequently and frequently, it is sometimes inconvenient to call directly in the office, because you need to keep quiet in the office, and the voice of the call will disturb the colleagues around you. But sending emails is too formal, and people not always open the mailbox to check emails. Therefore, it is very convenient to contact colleagues through the mobile APP, and if the text is not clear, you can also send a short voice through WeChat. This way, when the other party sees the information, he will reply to me at his convenience."*
Does the company support employees to use third-party apps for office work?	*"No."*
What do you think is the reason why the company does not support the use of third-party apps?	*"It should be worried about the company's data security. If the company's important documents or information are leaked, it may cause serious losses to the company."*
How does your company assign tasks and then track and evaluate work progress?	*"Assigning tasks and major issues that need to be notified or discussed are all that the manager convenes for a meeting in the conference room."*
Are there any shortcomings in this format of meeting?	*"Often people are absent from meetings, and important things need to be notified separately. I am a product manager, and I often need to travel. It would be very inconvenient if I need to communicate with my colleagues. Moreover, it is inconvenient to feedback on personal work progress during a business trip."*
If you are allowed to choose which of the following functions do you most want a company management platform to have? why? (A. Attendance function; B. Ask for leave or business trip; C. Working cooperation; D. Communication platform; E. Work distribution and work progress query)	*"E. Work distribution and work progress query. Because I travel a lot, if I can have a software to report on work progress, I don't need to be called by the manager at night to report on my work."*