Google Workspaces Alternative Application

Project Description and Clarification

Wahkiakum School district, Naselle School district, and Wahkiakum 4-H

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I.   Introduction

This is an official document of Team Toto's ideas, work, and solutions on the communicative application designed for the use of Wahkiakum School district, Naselle School district, and Wahkiakum 4-H. It will serve to record all phases and requirements needed to satisfy the school district's needs and all updates along the project timeline. It will provide a detailed case for creating an application that is student-user-friendly and follows CIPA guidelines. Finally, this document goes over all technologies used for this project including our reasoning behind these methods.

II.   Background and Related Work

The domain for this application is in the realm of "communication service with communities." That is, applications that allow messaging through a main "page" or community space and through private messaging. In regard to the application we are developing, the "community space" would be a classroom, club, or an extracurricular activity, allowing for administrators, teachers, or leaders to create a space for discussion, posting assignments or activities, and linking to video conferencing such as Google Meet or Zoom. Similar applications also have private messaging, in which two or more users can communicate through text messaging, voice or video calls, and send media or files. Finally, though lacking in some of the following popular applications, appropriate moderation is required. Thus, our application will be within this context, an application that allows for communication between users, allows for community spaces, and allows for moderation of user communications.

Part of the reason for the client's request for this application is due to the shortcomings of other related applications. Specifically, the shortcomings of Google Workspaces and Discord. These applications, along with others such as Microsoft Teams, Telegram, Slack, Signal, and more, don't exactly match the client's requirements, and thus, our project hopes to fix limitations. The client had previously experimented with a few different applications, but the limitations of each warrant the creation of our project.

Discord was initially brought up as a potential solution, as the client had previously utilized it for clubs. Discord is a very popular and successful application in this field, allowing for communication with voice calls, video calls, text messaging, media, and files in private chats or as part of communities called servers. The application is easy to use, promotes communication among others through the servers, and has proven to be one of the best communication applications in the field. The downside of it, however, is that Discord does not adhere to CIPA guidelines since moderation by administration, such as editing and deleting, is not up to standard. Additionally, Discord does not work well enough for classroom-oriented usage.

Google Workspaces is what the client and their school district currently uses, yet it runs into some more downfalls. It works well enough by way of having classroom spaces (similar to Discord servers), in which teachers can post necessary links, documents, etc. One problem they run into is the inability of administrators and teachers to edit student posts or comments. In addition, the application appears to be used in more business-oriented situations, not for schools. We did not understand why Google Classroom could not be used, but we guessed that

it was because they have a separate system for grading, and thus, the wide scope of Google Classroom (such as its grading features) may not be required.

Microsoft Teams is another similar application. Microsoft Teams offers workspace chat and videoconferencing, file storage, and application integration. Microsoft Teams also can also be more education-focused, as it allows teachers to distribute, provide feedback, and grade student assignments, along with assigning and grading quizzes. Again, we are under the assumption that the wide scope of the education side of MS Teams is not required. In addition, using the Educational aspect requires an Office 365 for Education subscription. Since the client and school district mostly uses Google applications, MS Teams does not make sense. However, ideas or inspirations for implemented functions can be pulled from it.

In regard to some new technical knowledge and skills we will have to learn, there are a few stemming from the fact that the applications must be Chromebook-accessible and preferably mobile-accessible. While we have some experience with mobile applications, finding a way to develop both a mobile application and a Chromebook application may prove to be a challenge. We have coded Windows-only applications, Linux-only applications, and Android mobile applications, but not Chromebook + Mobile. We will need to learn how to create an application that can be used cross-platform.

In addition, there may be a steeper learning curve for the front-end part of the application. We have much more experience with the back-end of applications, including Database work, but are less comfortable with the front end. Going further, we are placing a higher standard on this work, and thus we want to make the application look as visually appealing as possible.

Finally, it will be a challenge starting/setting up the application from scratch. In past classes, we would either have guides, templates, or help on creating a base of a full-stack application, but with this project, we will be starting from scratch. This experience will help, but utilizing it with a new platform we haven't used before will prove to be the greatest challenge.

III.   Project Overview

Wahkiakum School district, Naselle School district, and Wahkiakum 4-H are in need of an application that allows student users to communicate with each other across classrooms, clubs, groups, etc. To satisfy these district needs, our team is planning on analyzing, designing, and building a stand-alone application from scratch to improve student learning and connection. Since all students in the district have Google Chromebooks and about half own smartphones, it is clear and obvious that the application should be primarily developed for Android products. This way all students will have some form of access to the application leaving no one left behind.

One of the primary objectives we hope to achieve is the ease of use. Since we are creating this application to be primarily used by middle school students, it is important for us to incorporate a simplistic interface that is easy to learn. This does not project to be too difficult, however, as this application should not contain an excessive amount of information. Additionally, making the application visually appealing is important for "selling" the product to the students. If the students do not find the application interesting or visually appealing they will likely turn to alternative applications which the district is trying to avoid. Coming up with intriguing visuals

such as a logo and application name are secondary concerns that have been raised, but will ultimately contribute to this overarching objective.

For the safety of the students and faculty, having strict security to ensure the safety of student users will be a primary focus. The school district has used previous technologies such as Discord and Google chat. Still, it has run into many shortcomings such as students abusing Discord powers, no administrator accounts, and CIPA noncompliance. To comply with CIPA guidelines and meet requirements for security, the application would need to allow school staff to authorize, edit, and delete all student posts to combat inappropriate content and internet-abusive behavior. The application must also be inaccessible to the public unless permitted by an administrator. Although there does not project to be a lot of sensitive data transmitted through the application, data security must be taken seriously to protect every user.

When it comes to project development objectives, our team hopes to work at a steady pace over the next year to avoid cramming before deadlines. This can be achieved by setting up meetings throughout the week and organizing the workload across the team in an effective manner. Analyzing the strengths and weaknesses of each team member will be crucial for team efficiency and productivity, as time constraints will likely prove to be a challenge our team must overcome.

At the end of the application development lifecycle, our team will provide instructive training lessons so that no feature goes unrecognized. This may include instructive videos, workshops, and tutorials to help ease the transition from other applications to this one. This final step may seem insignificant, but is important and should not be forgotten.

It should also be noted that our team mentor, Ron Wright, has the important task of approving the team's work so that it is up to standard. Ron has worked closely with the students who will be using the application, so his requirements must have top priority over the rest of the team's. If Ron's requirements are able to be satisfied, we will deliver a polished product that is both effective and enjoyable for students and faculty to use on a daily basis.

IV. Client and Stakeholder Identification and Preferences

The primary client of this project is our industry sponsor and team mentor Ron Wright. He represents the Wahkiakum School District and their need for the application our team is creating. Ron will have the final say on the acceptance of our application and will therefore need to be satisfied when the application is delivered.

The primary stakeholders are the many students and faculty who will be using the application we create. With these primary stakeholders, it is important for our team to keep them in mind when composing the requirements and specifications of the project. Additionally, some of the secondary stakeholders include the parents of the students and the school/district administrators. Although these stakeholders are not expected to directly use the application, they are ultimately responsible for the safety of the students. With this in mind, we must ensure these secondary stakeholders are satisfied with the project's results.

V.   Glossary

Back-End: The server side; Everything necessary for an application that users do not see, including code/scripting, databases, software architecture, security, etc.

CIPA guidelines: The Children's Internet Protection Act our application must comply with.

Cross-platform: Software that is designed to work on several computing platforms. In this application, software must work on both Chromebooks and mobile devices.

Database: An organized collection of structured information, or data, typically stored electronically in a computer system.

Front-End: The client-side; everything that users actually see on an application, including the web pages, performance, UI, etc.

Full-Stack Application: The entire depth of an application, both front-end and back-end.

Software Architecture: The fundamental structures of a software system and the discipline of creating such structures and systems

Stakeholders: Individuals, groups, or organizations directly involved with, or indirectly affected by, a project, product, service, or enterprise.

UI (User Interface): The space where interactions between humans and applications occur; all the physical buttons, text boxes, etc. that users interact with within an application.

VI.   References

"Children's internet protection act (CIPA)," *Federal Communications Commission*, 28-Apr-2020. [Online]. Available: https://www.fcc.gov/consumers/guides/childrens-internet-protection-act. [Accessed: 04-Oct-2022].

"IEEE standards," *IEEE*. [Online]. Available: https://www.ieee.org/content/ieee-org/en/standards/index.html/. [Accessed: 03-Oct-2022].

S. Berkun, *Making things happen: Mastering project management*. O'Reilly Media, 2015.