Software for an Efficient Distributed Team

An analysis of software designed for digital collaboration and guidelines for effective development

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Executive Summary

Due to the COVID-19 pandemic there has been a surge in remote workers as companies are keeping their employees home due to government regulation, and possibly due to the workers own worries of returning to an office in the future. The purpose of this project is to analyze some of the most popular software choices available on the market in terms of online collaboration. This analysis will only focus on the software itself, and not external factors like pricing.

The approach that I took with this project was to interview multiple people who have varying levels of experience, and have experience with at least one of the software choices listed below. Additionally I read various articles and websites to see what they say are the pros and cons of each software. Lastly I then used each piece of technology to get a personal experience with each.

Introduction

While remote working has been around for ages remote working as know it is attributed to Jack Nilles who worked remotely for NASA back in 1973. Jack Nilles is regard as the "father of remote work" and in the years following his publishing of the paper, *The Telecommunications-Transportation Tradeoff*, the world slowly became more and more accepting of letting employees work from their homes.

Due to the COVID-19 pandemic there has been a massive boom in employees being forced to work remotely, and companies trying to figure out the best possible solutions for this. In this paper I will explore three of the most prominent software options on the market for remote collaboration; Zoom, Microsoft Teams, and Discord. Throughout this paper I will analyze each of their individual strengths and weaknesses, their similarities, where they have room to improve, and will make suggestions on what can be done to make remote collaboration better in the future.

Zoom

Zoom has been adopted by many schools and universities as their "go-to" program for hosting their online classes. Zoom was first created in 2011, but due to the current pandemic is has seen enormous growth in the past few months and has made many improvements to keep their product competitive against the other options out there.

Strengths:

One of the biggest strengths that Zoom has going for it is its ease of use. Zoom can get you up and in a video call in mere minutes. Zoom is singularly focused on video conferencing and as such has the most stable video calls out of the options reviewed. From a Human-Computer Interface (HCI) design the icons are fairly large which allows people of all ages to use it. Zoom allows the users to use emotes which can appear either above their cam window or in the participants window to allow for communication or reacting to the speaker. Zoom also allows the video calls to be saved and uploaded for review later on.

Weaknesses:

Unfortunately the ease of use of Zoom does have its own downsides too. Once a call is started Zoom doesn't allow changes to be made in the settings once a video call is going. Another unfortunate thing with Zoom is that there is no good way to swap ownership of a call once it has started. Out of all the options here Zoom has the least amount of flexibility in what a user can do since it is just focused on video conferencing. Finally from an HCI design Zoom's largest weakness is that it locks all the participants of a call into the host's settings once the call begins.

Microsoft Teams

Microsoft Teams was first released in 2017 and is a unified collaboration and communications platform. Teams comes with a built-in persistent workplace chat feature, video meetings, file storage, and platform integration. Due to the pandemic Microsoft has ramped up development of features, tools, and quality of life options in the software.

Strengths:

Out of all the options here Microsoft Teams provides the most robust support of options and tools. Teams is designed to be a platform for collaboration and has support for that. From an HCI point of view the biggest strength that Teams has is how good the quality of life choices it has are, Teams has a built-in text translator functionality for the chat windows. This feature makes sense because Teams is designed by Microsoft and Microsoft is a large multi-national company. Since Teams is created by Microsoft it allows a user to create a document in Word, Excel, or PowerPoint inside Teams and share it with coworkers. Teams automatically saves all video calls so as soon as the call is over users can go back and review anything they missed.

Weaknesses:

While the tools that Teams provide is massive it does mean that it is the most complicated of all the options discussed here. If there is video call it isn't as easy to join as Zoom because you have more software to install. Teams is designed for organizations, because of that it isn't very friendly if it's just a small group or you need to invite people outside the organization. From an HCI design the main downfall of Teams is that it isn't designed for the individual, this is obvious by when I signed up for the free version of Teams I was redirected to try the free version of Skype instead (another Microsoft owned product).

Discord:

Discord was initially released in 2015, and was a direct competitor to Slack. Discord is a digital distribution platform that supports audio/video communication, persistent chat rooms, and file sharing.

Strengths:

Of all the options here I feel that Discord is the friendliest when it comes to the individual experience. Discord allows people to set up their own groups and rooms, chat features, it allows for the creator of the room to change permissions of the users, and a myriad of other features. From an HCI point of view this program is the middle ground of ease of use and functionality. It is slightly harder to set up a call or server than Zoom is to get going, but is vastly easier when compared to Teams.

Weaknesses:

Discord isn't designed to be a collaboration tool like Teams, and it isn't a video conference program like Zoom, and as such it doesn't excel at either. Another one of Discord's weaknesses is the limitation of people it can host in a call to around 30 people, where both Zoom and Microsoft Teams can host over 75 people. Sadly Discord also doesn't save video calls, so if something was said in a video call there is no way to retrieve it. As far as an HCI design goes Discord has a glaring weakness in that it doesn't allow the user to change the font size or allow for colorblindness. While Googling whether this is an option for colorblind mode or not articles from 2018 pop up that say a colorblind mode exists when I go through the steps outlined in the article that option isn't there.

Observations

Going through each of the programs I was surprised to see how each program is tailored for a specific audience. I found that each program had HCI strengths and weakness with no single program excelling in every area.

I found that when looking at each program as it relates remote workers the program you should use depends really on the size of the group using the program. If a group is small, less than five people, I feel that Zoom is the best choice. It allows for quick meetups between team members, and as the video call functionality is the easiest to use, the team can hop on and have a discussion then go back to work. For a medium sized organization, up to around 50 people, would probably be best to use Discord. Discord is pretty easy to setup and allows the teams to setup separate rooms for members only, and can host calls up to 30 people at a time. Discord has a permanent chat feature so a user can go back and find an important message if necessary. If the organization is larger than 50 people I would suggest Microsoft Teams over all the others. Teams has the most features of any software and has the most functionality too. One of the other key factors with Teams is that it has the biggest financial backing of all the options and as such has of the best quality of life choices of them all.

Design Guidelines

While looking at each piece of software based on its ability to facilitate remote workers being effective members of their team there are three guidelines that I would like to see implemented across the board that I feel each program could benefit from.

Font Size

I have always felt that font size should be able to be resized. I don't think that this should apply to just the chat window since often times the settings and options font is smaller than the chat font. If a user is having issues reading the chat font size then they will certainly have issues navigating the menus.

Macros

In the majority of these products most users will only use a small amount of the features, and they will repeatedly use those same features for the length of their use with the program. Having a macro feature with an intuitive design that can allow even novice users to set up one-touch settings that can be saved and exported to other users would be a massive quality of life feature. That I don't see often enough.

Text-to-Speech

Some of the programs above have this functionality but I feel that it should be a standard. With this any user can participate in the text chat functionality. This feature could be extended to also vocalize any buttons or options a user hovers over to allow them to better navigate the program.

Conclusion

Creating software that fills a need is easy. Creating software that fills a need *well* is difficult.

When I started this research I assumed that I could find a program that was the best across the

board, and would be an easy recommendation. What I found when I was done with my research

was that if you want to use one of these programs you need to determine which is the right one

for you and for your team based on the size of your organization, what you need to use the

software for, and how experienced your users are. Once those factors have been determined then

you can decide not only which software is best suited for your organization, but to what extent

you want to support your employees as remote workers.

One thing I am certain of is that after the pandemic is over many companies will have already

heavily invested in remote working software, and I suspect that those same companies will

embrace the idea of letting their employees be remote workers more so now than they would in

the past.

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