

# Evaluation of the Usability of VidyoConnect

## Qualitative Research Findings

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### Abstract

This study aims to explore the usability and user-experience of Vidyo's application *VidyoConnect*. By simulating a one-to-one meeting and subsequently performing qualitative questionnaires, it was found that there are a handful of counter-intuitive aspects about the software that hinder smooth and comfortable usage. There were some features the users wished the software had, to enhance the experience but were lacking in the current version of VidyoConnect. Those wishes include a more comprehensible invitation email to a virtual meeting, the setup to share one's screen with other members of the meeting and a tutorial that guides a first-time user around the software's features. As more issues of the software and possible solutions are listed throughout this paper, one of the most crucial conclusions of this study was that every additional step the software needs to be successfully set up, is another potential barrier. Even if every single suggestion for improvement in this paper were implemented in VidyoConnect, different users would still have their individual perceptions. There is no such thing as a flawlessly intuitive software. Every software contains barriers and takes time getting used to.

### Table of Contents

Abstract.....	1
1. Introduction .....	2
2. Method.....	2
2.1. Qualitative Questionnaire .....	3
3. Results .....	3
3.1. Conference Invitation Emails .....	3
3.1.1. Inform the reader about the possibilities .....	4
3.1.2. Further unnecessary clutter in the invitation email .....	4
3.1.3. Setting up VidyoConnect right after the download .....	5
3.2. Screen sharing.....	5
3.3. Delay of the mouse cursor .....	6

3.4.	Mobile version.....	6
4.	Features Users of VidyoConnect found lacking.....	6
4.1.	Virtual tutorial .....	6
4.2.	Remote screen access .....	7
4.3.	No browser-based possibility to join a conference.....	7
5.	Discussion.....	7
5.1.	Advantages and disadvantages of VidyoConnect being unavailable to the public .....	7
5.1.1.	Advantages .....	8
5.1.2.	Disadvantages.....	8
6.	Limitations and outlook.....	8
7.	Conclusion.....	9

## 1. Introduction

Video conferencing software (VCS) has been around for long time in terms of technological age. One of most well-known, Skype, was initially released over 15 years ago. In the meantime, Skype has gone through a plethora of design changes and was joined by countless other successful and not so successful video conferencing software. Today, Skype remains one of the most popular digital conferencing tools in private and even professional environments. It is also one of the most frequently used VCS at University of Zurich (UZH), despite the fact that it is generally recommended not to use Skype to discuss sensitive matters, due to privacy concerns. This raises the question why individuals do not switch to a more secure software, especially as it is readily available? The answer is that the ecosystem of Skype and the large number individuals using it, keeps users trapped and continuously reels new users in. This is important, as the wide distribution means that most individuals are familiar with how it works. Skype gets a few things right, that other VCS don't, such a being operating system independent and free to download, but it is far from being perfect. As UZH (as well as all Swiss universities and colleges) have access to Vidyo's VidyoConnect, it begs the question why it is not more frequently used. In an attempt to explore the user-experience of Vidyo's Skype-alternative, an experiment was set up to simulate a one-to-one meeting.

## 2. Method

To evaluate VidyoConnect for academic use, a one-to-one meeting was simulated in which a presentation was hosted using VidyoConnect. Subjects of the study were invited to first be a recipient of hosted presentation, and to then host the presentation themselves. Thus, the experimenter sent the subjects an invitation email to the subject, let them download the VCS and held the presentation. Then the roles were swapped, it was the subjects turn to invite the other by email, to share the screen of the presentation slides and then to present the slides of the same

presentation that the experimenter had just presented before. When the roles were swapped, the screen, mouse movements and voice of the subjects were recorded using OBS Studio<sup>1</sup>, a free, open-source screen and sound recording software. During that recording, the subjects were ordered to audibly document what they were doing (thinking out loud). Moreover, the subjects were told to turn their mouse cursor into a laser pointer, so that their mouse movement was more easily visible on the recording. The slides of the presentation were prepared in such a way to cause the subjects to point to graphs and words using their laser pointer. Thus, the temporal delay and incongruences of transmitted sound and video could be more easily detected. In addition to that, the slides contained a question to cause the two individuals to converse, in order to investigate to what extent, the conference was digitally distorted.

### 2.1. Qualitative Questionnaire

One qualitative questionnaire was conducted before and after the presentation respectively. The first questionnaire evaluated the subjects' experience with VCS. It included two closed-ended questions and four open-ended questions. The second questionnaire inquired the experiences with VidyoConnect after using it to receive and host a presentation. It included seven open-ended questions.

*Table 1: In the table below, there are three sample questions listed of each questionnaire.*

Sample Questions <i>before</i> the experiment	Sample Questions <i>after</i> the experiment
<ul style="list-style-type: none"> <li>• Which video conferencing software have you used so far?</li> <li>• For work? Or for leisure time?</li> <li>• How has the general experience been with video conferencing software?</li> </ul>	<ul style="list-style-type: none"> <li>• What went well in the experiment, what did not?</li> <li>• What felt different about a digital meeting as opposed to non-digital meeting?</li> <li>• Did the digital distortion of the presentation distract you?</li> </ul>

## 3. Results

The experiment showed scores of ways how easily misunderstandings can happen and that instructions have to be very specific, or else the user quickly gets annoyed and frustrated.

### 3.1. Conference Invitation Emails

The default invitation email of VidyoConnect to invite individuals to video conferences contains a number of misleading statements. This problem should be one of the easiest to fix for the software engineers, as they only have to write a, to a layman, understandable email. The subchapters below describe some of the confusion-causing contents of the invitation email.

<sup>1</sup> <https://obsproject.com/> [12.09.18]

Hello,

Please join my SWITCHvideoconf meeting by clicking this link:

<https://videoconf.switch.ch/join/mtZAKk9d5V>

If you want to join by phone, please use one of the phone numbers listed in:

<https://help.switch.ch/videoconf/Calling-in-from-a-phone/>

and enter the meeting extension 113378 in order to join.

If you have an H.323 endpoint, please reply to this email and specify the IPv4 address of your endpoint, such that the host of this meeting can call you.

If you want to join by H.323 yourself, please use one of the gateways at 188.184.66.56 or 207.75.165.84, and enter the same meeting extension as above.

The confirm key may be a # or a \*, depending on the type of your device.

IMPORTANT information for all connection methods: The PIN to this meeting is: .

Thank you for using the SWITCHvideoconf service!

Figure 1: The invitation email of VidyoConnect contains two links to join the conference, information on joining via an H.323 endpoint and the pin for the upcoming meeting.

### 3.1.1. Inform the reader about the possibilities

The invitation to a video conference with a VCS the invitee has never used before should be as comprehensive and straight forward as possible. But the first obstacle to a frustration free setup of VidyoConnect, was to find out what exactly recipients of the email had to do to download the software. The first sentence is comprehensive “Please join my SWITCHvideoconf meeting by clicking this link: [provided link]”, the next line however does not instruct the invitee as well as the first one. The second line reads: “If you want to join by phone, please use one of the phone numbers listed in: [provided link] and enter the meeting extension 113378 in order to join.” What they fail to inform the invitee about, is that there is a free app for both iOS and Android, with which the user would get a similar experience as when using a computer, that is it provides sound and video. But that app is never mentioned in the email, what they advise instead is to call a server that will transmit all sound from the conference to the phone, basically making it like a normal phone call, with no video and the usual calling fees that apply when calling anyone.

**Solution:** The email should explain that there is a free app, that should be used if internet is readily available. It should also mention that if called via the number instead of the app, there will be no video and that usual calling fees will apply.

### 3.1.2. Further unnecessary clutter in the invitation email

After the two links, there are two paragraphs that describe how to join the conference via an H.323 endpoint. The subjects of the study were consistently confused about how they were supposed to respond to the email. Should they just click the first link, or reply to the email reporting

their IPv4 address? Most subjects were not even familiar with those terms. Furthermore, the experiments were always conducted without locking the virtual room with a PIN. Instead of writing that there is no PIN for this conference, the email states: “*IMPORTANT information for all connection methods: The PIN to this meeting is: .*”, which confuses more than it helps. Subjects were unclear on whether there is not PIN or if the PIN is a dot.

**Solution:** Remove the two paragraphs asking for the H.323 endpoint. If there is no PIN for the meeting, simply write in the email that there is no PIN, instead of leaving it so ambiguous.

### 3.1.3. Setting up VidyoConnect right after the download

When invitees click on the first link, they are taken to the download page of VidyoConnect. The download process is quite straightforward. However, when invitees subsequently open the VC app, they are asked for a portal code to the virtual room. Most subjects went back to the email expecting to find either further instructions or a portal code, needless to say, neither is present in the email. Next the invitees, slightly annoyed by this point, would randomly start copy-pasting IP addresses into the portal code field, assuming those were portal codes. Since IP addresses are not the portal codes the app needs, the invitees are not let in. Thinking that there went something wrong in the installation process, the invitees would desperately click the first link of the email again. This in turn opens a new browser window, which will ask for permission to open the VidyoConnect app, that will, if the permission is given, allow the invitees into the virtual room. Surprisingly, all of the subjects eventually did click on that link a second time, but it was much more confusing and time-wasting than it needed to be.

**Solution:** Either include the portal code in the email or state that invitees should again click on the first link to open another browser window and to permit the browser to open VidyoConnect.

### 3.2. Screen sharing

After the experimenter had finished presenting the slides, the roles were switched, meaning the host became an invitee and the invitee became a host. The first step as a host was to invite the invitee via email. That task was usually solved quite quickly. Assuming the invitee managed to understand the email and figure out the portal problem, the next task was to share the presentation with the invitee. At this point subjects were confused by different aspects; some did not connect the icon to share the screen to do just that, others were confused by the description when hovering on it with cursor “*Share applications*”. The description text made them think that clicking the icon would lead them to a social media page, which they could tell others about VidyoConnect, as in “sharing” the VidyoConnect app.

**Solution:** Choose a more intuitive icon as well as a more explanatory description text. Subjects suggested descriptions such as “Share your screen” or “Share content”.

### 3.3. Delay of the mouse cursor

Delay of mouse cursor was very dependent on the machines being used and the days they were used on (varying internet bandwidths). Sometimes, video transmission and sound were quite smooth and stable, and other times both were very delayed (1-2 sec.). Hence, the time delay of the cursor cannot be pinned to the VidyoConnect in particular but is a product of internet bandwidth. Interestingly, the subjects seldomly felt uncomfortable due to this delay, because the sound and the video were often delayed together.

**Solution:** This problem is largely independent of VidyoConnect. Make sure you have a good internet connection and a high bandwidth.

### 3.4. Mobile version

The mobile version of VidyoConnect does what it promises. Sound and video transmission are as smooth as on a computer. One point of criticism, that just like in the desktop version, one cannot adjust the window size of the shared presentation and the window of the host. Each window simply takes up half the screen. This made it very difficult to decipher what it said on the slides, as the writing became so small on the small phone screen. A fine solution to read the writing on the slides is that the window allows a pinch-zoom option, with which invitees could zoom to the text they could not read. The main problem is that most first-time invitees are unaware of its existence. Invitees should be informed about the app in the invitation email.

**Solution:** Allow app users to adjust the window size of the shared screen and the window of the host. In addition to that, inform invitees about the existence of the app, instead of telling them to call the server by phone, which might cause fees.

## 4. Features Users of VidyoConnect found lacking

Almost every time after the virtual meeting was simulated, the subjects complained about at least one feature VidyoConnect was lacking. The subchapters describe some of the most common desired features.

### 4.1. Virtual tutorial

A virtual tutorial for when the software is opened for the first time to show the user around. It should be optional, and not forced, with the possibility of exiting it at any time. This tutorial should explain features such as how to invite members, add member as contacts and share the screen with members. This way a lot of misunderstanding could be avoided.

Although, there are some “tips and tricks” displayed on the starting page of VidyoConnect, they seem like a very shy attempt to help. Besides, the fact that this was one of the most commonly named lacking feature, it seems telling that first-time users need an optional tour around the software features first.

#### 4.2. Remote screen access

Invitees wanted the option to remotely access the host's screen with the invitee's mouse cursor in order to point at certain things on the slides. According to them, such a feature would make communication much more effortless and more natural feeling. This remote access would only be granted after the host would have permitted individual invitees to do so and would be able to cut the remote access any time.

One argument that may raise concerns about such an implementation would be that if the bandwidth would already be very low, and there was already some significant lag, then this remote access would might delay the lag even more as another layer of information transfer would have been added.

#### 4.3. No browser-based possibility to join a conference

Since the update of VidyoDesktop to VidyoConnect there is no browser-based plugin anymore, i.e. guests to join a video conference always first have to download and install the VidyoConnect software. This was many times a complaint by invitees. They felt uncomfortable having to click a link in an email and subsequently to download an unknown software. Moreover, it raised concerns that administrator's rights might be missing if one is using a company's computer. When Vidyo was confronted about this issue via email, they simply answered *"I'm afraid the option to use the browser plugin went lost with the recent update from the client to the app VidyoConnect."*

### 5. Discussion

To be clear, most of these reported problems are only problems for first-time-users, and as soon as that one mistake was made once it does generally not happen again. There is some "getting used to" for any new software that is used for the first time. Hence, not all of these problems are inherently bad about the software, they are simply not intuitive for first-time-users. Nonetheless, one of the factors why VC are so bothersome for most, is because there are many different kinds of VC software being used in different places and if a VC does happen at least of the members is going to have to adapt to a new software. If that process of getting used to a new software was so much more bother-free, there wouldn't be as much of a hassle as there is now.

#### 5.1. Advantages and disadvantages of VidyoConnect being unavailable to the public

In the introduction of this paper, it was described how Skype was and still is able to maintain such a strong grip on so many devices, even though much newer and arguably better VCS have been available. Two crucial advantages of Skype include its platform independence and being free of charge. The two subchapters below describe what VidyoConnect does well, and what does it not do so well.



### 5.1.1. Advantages

An advantage of using VidyoConnect is that it will keep private contacts out of the program. As it is required to have an AAI<sup>2</sup> account to set up a virtual room, the software would be used for purely professional purpose as well as being much less distracting as Skype would be. On the other hand, it can be argued that one could also just simply create one professional Skype account and one private Skype account, which would serve the same purpose.

### 5.1.2. Disadvantages

VidyoConnect in the academic context is limited to Swiss universities, as the access is provided by SWITCH<sup>3</sup>. It is almost ironic that video conferencing is supposed to bridge individuals that would otherwise be too far apart from each other, but Swiss universities are not that far apart. In addition to that, collaboration between Swiss and universities of other countries is crucial and will only increase as time goes on. Academics outside Switzerland would not be able to reach Swiss academics using VidyoConnect without being invited first, which is very bothersome for both parties. Another point is that, even if individuals that live in Switzerland, but aren't registered at some Swiss university, can also not use this software. One of the participants laid it out as it is: "There is no point in having a 'Switzerland-only' video conferencing system, if it only takes three hours by car to go from Zurich to Geneva. Having a 'one-country-only' software makes more sense for big countries like China or the US, where distances are a different story."

## 6. Limitations and outlook

There are many setup choices of this study that are problematic or questionable at the least. One of them is that the low participation rate. Only 8 participants participated in the study. Also, only one female participated, while all subjects were between 21 and 26 years old, making the age diversity particularly low. The study should be repeated inviting more participants in total, with wider range of age groups and a more balanced gender distribution.

Another weakness of this study's layout is the lack of availability of a second computer. That means that each participant had to take either their computer or smartphone with them. That creates a bias as different computers have different capabilities, thus different processor which translate to different framerates of video transmission. Always using the same two computers would prevent such a bias. On other hand, if participants have the same computers, if subjects have to use an operating system (OS) they are not used to it may also cause another bias which is not caused by VidyoConnect, but rather by the different OS.

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<sup>2</sup> AAI stands for *Authentifizierungs- und Autorisierungs-Infrastruktur* (common authentication and authorization infrastructure) of Swiss universities.

<sup>3</sup> As the Swiss national research and education network organization, SWITCH manages the educational networks among Swiss universities and research facilities, and the links to other (non-Swiss) university networks.



The last aspect to improve about this experiment was that the subjects' screens were not recorded when receiving the conference invitation email first download the software, but only later when they were hosting the presentation. Hence, there is not video documentation about the reactions of participants to the default invitation emails of VidyoConnect.

## 7. Conclusion

VidyoConnect still has a lot of room to improve to be a worthy choice of academic video conferencing software. The software's problems and suggested solutions have been laid out above to point to a possible path to enhance user experiences. It cannot be overstated how important the comprehensibility of the default invitation email is. If this first step to invite members to a meeting already fails, then it does not matter how good or bad the VCS is, there will be no conference to begin with. Furthermore, the screen sharing setup can still be made further intuitive, by adapting the icon and the layout of choice of application to share. The next step is to smartly implement them to provide the users with the best VidyoConnect experience possible. No complex system is immediately understandable, logical and intuitive for every single person that uses it. There will always be some individuals that are used to other ways of sharing a screen and logging into a virtual room. As everyone's experiences of the past are different, so are perceptions and intuitions. Because of that, an *optional* tutorial is absolutely necessary. The bottom line is that customers are most content when they feel they are in control and are not forced into an unnatural way of interacting with some software. The ultimate goal of any software should be to adapt to the user, instead of the user adapting to the software.

## Imprint

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This study has been conducted as a part of an internship of the author at the Informatics and Sustainability Research Group under the supervision of Prof. Dr. Lorenz Hilty.

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