EVIVA – EVALUATING THE EDUCATION OF INTERPRETERS AND THEIR CLIENTS THROUGH VIRTUAL LEARNING ACTIVITIES

Deliverable 4.4

Videoconferencing Environment for the Evaluation Studies

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Contents

1 Introduction

Teleconferencing technologies, which link communicative partners at two or more locations, have created new opportunities for real-time interaction without the need for physical co-presence (distance communication). Among the common forms, especially in educational contexts, are text chat, document sharing, whiteboarding, voice chat, videoconferencing and 3D virtual environments that normally combine various forms of text and voice chat and, to a lesser extent, the possibility of document sharing. All of these have created new communication opportunities in professional and educational contexts. In line with the overall aim of EVIVA, which is to conduct an evaluation of three types of ICT-based environments, this deliverable focuses on videoconference (VC) environments. More specifically, it documents the different videoconference environments that were tested and assessed for their suitability for the Evaluation Studies (WP 6) of the EVIVA project and provides a rationale for the decision that was made.

As an important point to bear in mind, the EVIVA project is interested in exploring benefits and potential drawbacks of using VC environments as one type of ICT-based environment for interpreter training. Our interest is not to compare and contrast different VC tools, but to highlight the benefits and shortcomings of VC in the context of training interpreters and users of interpreting services. The benefits and shortcomings of VC will then be compared to those of other types of ICT-based environments. However, a decision had to be made about the most appropriate available VC in this context and after research into various VC options, Google+ (Google Hangout) was selected. For a better understanding of the rationale behind the selection of specifics of interpreting in VC-based conversations, it is helpful to first of all take a look at some of the basics of VC communication and interpreting in VC settings. This is the focus of Section 2.

Section 3 then presents an overview and comparison of six videoconference environments that were considered as possible options for the Evaluation Studies (Workpackage 6) in terms of their relevance and usefulness. The key features of the most relevant four options are then summarised in Section 4, with a specific focus on the practical criteria required for the Evaluation Studies. Based on the assessment of these environments and their affordances, Section 5 provides a recommendation for the videoconference environment to use for the Evaluation Studies.

2 Communicating and interpreting in small-group videoconferences

2.1 The evolution of videoconferencing

The simplest and perhaps most common way of using VC technology is a so-called peer-to-peer VC involving two participating sites. Peer-to-peer VCs are typically done with a PC, laptop, tablet or mobile device, and allow for a small group of interlocutors to participate at each site. With small mobile devices, no more than one to two participants per site can be involved if visibility and clarity are to be maintained, whereas PCs and laptops, especially combined with more flexible and/or high-resolution cameras and larger screens offer more possibilities.

Alternatively, a VC can be conducted as a multipoint conference connecting more than two sites. With traditional VC equipment, this requires a multipoint bridge to connect all sites. Today, web/cloud-based services such as Skype and Google+ offer multipoint video-conferencing for a small fee (Skype, GoToMeeting) or no fee (Google+, Microsoft Lync).

As with other ICTs, one of the great achievements of VC technology is that it enables people who are geographically separated to communicate in real-time, but unlike other environments such as voice chat and, for the time being at least, 3D environments such as Second Life, the use of videoconferencing offers the benefit of seeing each other and, depending on the camera setting, a part of each other's respective (real) communicative environments. Videoconferences thus ultimately fulfil the dream of telephone pioneer Alexander Bell who was quoted by the New York Times in 1927 as saying (around 1906) "that the day would come when the man at the telephone would be able to see the distant person to whom he was speaking" (NYT, 08/04/1927, p. 20).

The New York Times report came one day after one of the very first public demonstrations of videoconferencing, a link between New York and Washington. To mark the significance of the event, the report claimed that the "demonstration of combined telephone and television, in fact, is one that outruns the imagination of all wizards of prophecy". Interestingly, it also pointed out that one of the major telephone companies at the time, AT&T, "has no idea today whether [this technology] will ever be commercially valuable" but that the "corporation's attitude is that it wants to know all about the subject, in spite of the fact that its future is vague" (NYT, 08/04/1927, p. 20). AT&T's first attempt at marketing its 'picture phone' in the 1960s was only moderately successful, but from the 1980s, the commercial success of VC equipment took off, after the availability of ISDN and then broadband technology had made it a more viable option than early satellite-based VCs. The availability of internet-based VC made this an attractive option for educational purposes, but it was perhaps not until the arrival of web/cloud-based VC services, which rendered superfluous the need for expensive proprietary equipment, that VC found more wide-spread use in educational settings.

At the same time, the 'picture phone' idea now competes with ICT environments that enable, yet again, a very different type of interaction – 3D virtual environments that provide users with the experience of a simulated reality which promises to be lifelike and photorealistic one day. Taking up these trends, one of the key questions the EVIVA Evaluation Studies in WP 6 are addressing is whether the availability of the visual image in videoconferencing brings or is perceived to bring advantages when compared to 3D environments where users cannot see each other and each other's real environments, but where they may be 'immersed' in the illusion of being in the same virtual space.

2.2 Videoconference communication in small groups

As pointed out above, one of the basic premises of the EVIVA project is that information and communication technologies (ICTs) can offer solutions for simulating real-life practice, especially in situations where access to real-life practice is not available or restricted, as is the case with many interpreter-mediated situations. The EVIVA project explores the specific potential of different ICT-based environments to support 'situated learning', i.e. to offer learners the experience of situatedness and authenticity. Given that interpreting normally relies on verbal and visual clues, the role of different types of visual clues—i.e. video images vs. 3D virtual reality—in creating this experience is one of the crucial aspects to explore.

In VC communication, as in other environments for distance communication, the participants have to rely on technical channels for communication. Although research postulates that VC communication is generally less effective than face-to-face communication (for a comprehensive overview, see Finn *et al.* 1997, see also Hauber *et al.* 2005), different evaluations have been derived for the usefulness of VC communication in different contexts. In a seminal work in the field of distance communication, Short *et al.* (1976) discussed the efficiency of distance communication media to support different communication purposes. This discussion was linked to the ability of the different media to transmit interpersonal verbal and non-verbal cues. Short *et al.* postulated that the absence of such cues leads to a reduced 'social presence' between participants. Since Short *et al.* also believed that social presence is more important for achieving social tasks such as conflict resolution and negotiation than intellectual tasks such as decision-making, it has often been assumed that VC is more suited for the latter. However, conclusive evidence is not available (see Ferran and Watts 2008), and many communicative purposes have not been investigated systematically in terms of whether VC supports them efficiently. Whilst this does not invalidate an approach that uses the purpose of communication as a guide for assessing the usefulness of VC, it seems necessary to go beyond the concept of social presence and to discuss the use and the limitations of VC communication in broader terms.

Furthermore, as pointed out above, available studies have often—directly or indirectly—benchmarked VC communication against face-to-face communication. However, the EVIVA

project investigates the potential of ICTs as a means of supplementing opportunities for presence learning and communication. It is, therefore, important to highlight the point originally made by Short *et al.* that communication media differ in their ability to transmit interpersonal cues. In the light of this it seems appropriate to evaluate each ICT option in in its own right before assessing it against possible alternatives. This approach is pursued in EVIVA, because it is thought to ensure that both the benefits and the limitations of the different ICTs can be fully appreciated.

As a point of departure for a more in-depth consideration of videoconference communication, two important prerequisites of communication need to be highlighted. One is the ability to share 'common ground' in communication, i.e. a mutual understanding of the knowledge and the premises from which the participants start (Clark 1996). If this is not given, any discussion, debate, argument, information exchange or decision-making is difficult, and it is hard to establish whether there is understanding, agreement, disagreement etc. among the participants. The other prerequisite is the ability to develop a 'rapport' between the participants, i.e. the ability to coordinate and synchronise the communication, to indicate the stance someone takes to what is being talked about, or to gauge whether understanding has been achieved and agreement (or otherwise) reached. This is normally achieved through the often 'small' interpersonal verbal and non-verbal clues (Gumperz 1982), which are also mentioned by Short *et al*. Both prerequisites are not easy to achieve in VCs, irrespective of the communication purpose, and for a variety of reasons.

In VCs, the interlocutors are in different physical and social environments at their respective sites and are exposed to different influences at their respective sites (e.g. background noise or disruptions). VC participants only have a partial and two-dimensional view of the remote site, i.e. they see the two-dimensional image of the remote participants and the remote environment that is captured by the camera and presented on the screen. Furthermore, direct eye contact is difficult to achieve, because the participants in a VC must make a choice between looking at the screen (to see the video image of their remote interlocutors) or looking into the camera (to give the remote interlocutors the impression that they are being looked at). In addition, especially in the equipment used for small-group VCs the video image tends to be small, incomplete and/or sketchy. The sound quality can be problematic, too, depending on the hardware, the available bandwidth and the transmission protocols used, e.g. whether a minimum bandwidth is guaranteed or not.

The physical separation of the interlocutors and the extract-like view of each other's environments make it difficult to gauge the atmosphere or communicative situation at the remote site and therefore tend to create a latent uncertainty about what 'the other side' does and means. This, in turn, makes it difficult to develop common ground and to place and retrieve small verbal and non-verbal cues.

The observed consequences include, for instance, unnatural ways of speaking, a tendency to speak louder, over-elaborate and be less coherent as well as fatigue, omission of key information and avoidance of 'difficult' or complex topics (Braun 2004). Interlocutors have also been found to spend a considerable amount of time on explicitly co-ordinating the communication. O'Malley *et al.* (1996) and Olsen *et al.* (1997), for example, argue that a 'greater processing overhead' is required in VCs, making the communication potentially less efficient, i.e. the interlocutors spend more time coordinating the interaction and clarifying what they meant, and attempts to resolve 'deadlock' situations (longer pauses) can result in overlapping speech and other problems. Furthermore Ferran and Watts (2008) argue that VC communication increases the participants' cognitive load because coordinating the communication and identifying who is speaking (when there is more than one person per site), creating (the illusion of) eye-contact and other tasks – all to be carried out while processing what the speaker is saying – take up cognitive resources. Ferran and Watts observe that the high cognitive load entails new information-processing strategies in VCs which differ from other forms of communication. Visual cues such as the likeability of a person, for example, are shown to become more important than the content of what is said.

However, communication practice in business and educational environments suggests that the ability to see each other in real time during distance communication compensates for potential problems in distance communication. Whilst there may have never been a 'videoconferencing revolution' in the business world, comparable to the scale of the 'mobile revolution', videoconferencing is now a widely used communication tool in both professional and educational contexts.

2.3 Videoconferencing and interpreter training

There is also a growing body of research that investigates the use of interpreting in videoconference-based settings, especially in 'remote interpreting' where the interpreter is physically separated from the main participants, and in 'videoconference interpreting', where the interpreter is co-located with some of the participants, i.e. at one of the VC sites (for overview see Braun & Taylor 2012, Moser-Mercer 2003, 2005, Mouzourakis 1996, 2006, Roziner & Shlesinger 2010). This research shows that these forms of videoconference-based interpreting are challenging. For example, comparative studies of traditional and VC-based interpreting reveal that VC-based interpreting magnifies known problems of interpreting to a certain extent. In particular, the following problems were identified, albeit to a varying extent across different studies:

- Listening and comprehension problems
- Difficulties with communication management
- Problems with rapport-building with the other interlocutors

- Traditional interpreting strategies, such as visual signals, are less effective, e.g. in allowing the interpreter to take the floor and interpret
- Other strategies, such as oral intervention to take the floor or resolve a problem, tend to feel more disruptive
- A range of psychological and ergonomic problems occur.
- Interpreters seem to tire faster in video-mediated interpreting.

Another setting, which has received less attention in research to date (but see Braun 2004, 2007), is the setting where an interpreter and the participants are each in separate locations. This requires a multi-point videoconference, i.e. a type of VC which was expensive and difficult to coordinate until web-based services began to fill this gap (see above).

In the EVIVA context, it was clear from the outset that VC environments would be most suitable for small-group interaction, especially for role play simulation, and it was assumed that this could be supported by multi-point VCs in which every participant could be in a different location. There are some caveats, however. The small but growing body of research into video-mediated interpreting (see above) makes it clear that this method of interpreting is particularly challenging and that videoconferences used in interpreter-mediated communication require high audio and video quality standards.

One important question is therefore whether low-end VC systems, which provide cheap or free multi-point options but which are clearly not viable for professional interpreting contexts, would be suitable for an interpreter training context. From a purist's point of view, the key here is the question of whether training should rely on a technology whose viability has been shown to be problematic for professional interpreting.

The cautious but pragmatic view adopted in EVIVA is, first of all, that videoconference technology can potentially offer an effective solution to some of the current problems surrounding the provision of interpreting services, providing that relevant research is conducted to improve understanding of video-mediated interpreting and to enable mitigation of the challenges. As well as highlighting the limitations of video-mediated interpreting where applicable, research outcomes will help to shape the design of the solutions and interpreters' working conditions. The development of training (in videoconference-based interpreting) is an integral part of such an approach (see also Braun *et al.* 2012).

Second, and more importantly, EVIVA focuses on interpreter training i.e. to explore the extent to which the VC environment is useful for self-study practice in interpreter training, especially for dialogue interpreting, rather than to explore whether and under what circumstances a VC environment is suitable for professional interpreting assignments. Similarly, the aim of EVIVA is not to offer/evaluate training in videoconference/remote

interpreting as such, although the use of ICT-based environments for training will, of course, help students to acquire the skills required for the professional practice of technology-based or distance interpreting.

In this training context, where the main goal is to provide opportunities for practice outside the classroom and for students who may not all be in the same place, the possibility of conducting multi-point conferences is useful because it can be seen as the most 'neutral' way of using videoconferencing technology in connection with interpreting, i.e. of re-creating the conditions of traditional dialogue interpreting. For example, in a role-play simulation, the student who takes on the role of the interpreter has an 'independent' physical location rather than having to cope with the potential challenges of sharing the space with one party, whilst being separated from the other party, or being separated from all parties.

3 Discussion of selected videoconference environments in terms of relevance and usefulness for EVIVA

For the reasons outlined in the previous section, the assessment of different VC options with regard to their appropriateness for the EVIVA Evaluation Studies focused on systems that are

- web/cloud based, rather than being based on proprietary hardware/software solutions
- capable of multi-point videoconferencing.

Six potential options were identified and will be discussed in this section. The VC options were assessed (1) on their allowances for multiple participants, usability (both in-call and setting up), and cost; and (2) on their ability to share and edit documents in-call, cross platform availability, ability to record VC sessions and ability to store learning material (e.g. role play outlines). The primary assessment criteria were considered central to the evaluation, while the secondary criteria were taken into consideration but would not be directly relevant to the evaluation. It was decided that the VC platform would in the first instance be assessed in terms of how interpreting practice can be facilitated, without any additional tasks (e.g. in-call document sharing, editing, etc.). The secondary criteria were, however, important to consider at the outset. If the evaluation shows that the VC option chosen can be used to facilitate interpreting practice, attributes such as multi-platform availability and recording ability may be advantageous, and therefore may support longer-term use of the VC option in the context of interpreter training.

3.1 Skype

Figure 1: Skype group call. Source: https://support.skype.com/en/faq/FA10614/making-a-group-video-call-windows-desktop

Skype is probably the most well-known videoconferencing service available. Although predominantly used for international person-to-person video calls, Skype has been used in business and education settings for some time and has seen its number of users grow to just under 300 million. However, there are still overriding issues with the quality of Skype calls, the ability to connect easily and the lack of any other meta-services (e.g. document sharing).

In terms of using Skype for the EVIVA Evaluation Studies, there are both advantages and disadvantages that need to be considered. The familiarity that students have with the Skype service will certainly be of benefit in terms familiarising themselves with the 'new' technologies. Furthermore, the service is available on multiple platforms: full downloads for all major computer operating systems and apps available from Android, iOS and Blackberry OS 10+ networks. However, one downside is that in order for students to make group conference calls, a premium account (GBP 3.50 per month) will be needed. The cost to the student could be counteracted by the project having a subscription which students could use, but this could become problematic if more than one student wishes to make a group call at a time. A further issue is that Skype is purely used for video calls and, as such, doesn't have any document sharing capabilities although screen-sharing is possible with a premium account. Finally, Skype does not have an in-built ability to record calls. There are programs and apps available (e.g. http://www.evaer.com/) that will allow video Skype recordings which cost around USD 20.

3.2 Google+ Hangout

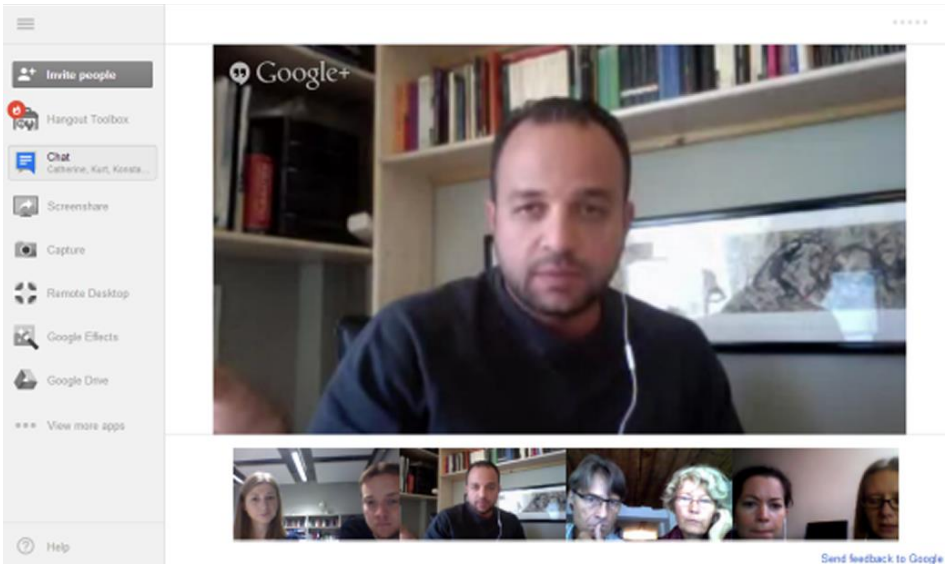

Figure 2: Multi-point call in Google Hangout (EVIVA project virtual meeting)

Google+ is a social layer to Google's all-in-one (email, video chat, instant messaging, document storage, etc.) service which offers a 'Hangouts' option as part of its platform. Google+ is the second most popular social networking site in the world with over 300 million active users (Anon 2012). As Google+ is quite new, and as such it is yet to be tested in interpreter training contexts but its adaptability for interpreter training purposes has been noted and discussed (cf. Erkollar & Oberer 2011). Google Hangouts are places used to facilitate group video chat (with a maximum of 15 people participating in a single Hangout at any point in time) and a Hangout is only available to Google+ users on invitation.

The advantages of using Google+ are quite clear, as it: is free, allows multiple participants to video call each other, allows users to share and edit documents, allows screen-share, and gives users the option of uploading and downloading documents onto the Google Drive (a file storing/sharing facility). In addition, the service is slightly less exposed than other social networks as it allows people to be stored in groups, known as 'circles', to ensure privacy between sets of people. Like Skype, Google Hangouts are available across a range of platforms (e.g. Android 2.3+, iOS, Windows) although, because it is a newer service, availability tends to be currently restricted to the more popular platforms and Google Hangout is not available on devices and OSs that have a smaller market share (e.g. Blackberry, Linux). As well as a restriction as to which platforms Google Hangouts can be used on, students may not be as familiar with the network as they be on more commonly used networks, such as Skype. Even though Google+ is the second most used network in the world, the majority of its users are in North America, Brazil and India (Anon 2012) therefore, European students may not be quite so familiar with it. Furthermore, it is not currently

possible to record Google Hangouts without being 'on-air'. Airing a Hangout is an option which allows the user to record a Hangout whilst airing it live on YouTube. As this would make their recording available for public viewing, third party screen-capture software (e.g. Camtasia) would need to be used for our purposes.

3.3 Microsoft Lync

Figure 3: Person-to-person call in Microsoft Lync. Source: http://news.cnet.com/8301-10805_3-20023081-75.html

Microsoft Lync is an instant messaging and videoconferencing client used with either a Microsoft Lync server or with Microsoft Office 365. Although it works on its own server, the reason it could work very well for EVIVA Evaluation Studies is that, because it links to all Microsoft Outlook accounts, it is sometimes available through the IT services of educational institutions.

Calling someone and setting up a video conference is very easy to do as it links with everyone else on your institution's server so it is as straightforward as sending an email. Participants have the ability to share their screen and hand over control of their screen to another participant. This makes document sharing and editing straightforward and collaborative. Recording is also very simple to do as the record function is built in to the programme; however, the screens will only show the current speaker and a picture-in-picture shot which means that this is the only shot that the recording will show (it will show any content-sharing/editing though). There is a very high restriction on participant numbers (250) but the video can pick up a delay when too many tasks are attempted (e.g. record the call, edit documents and screen-share) at the same time.

Even though Microsoft Lync is very simple to use, installing it can be quite difficult because it has to connect to the institution's server. Whilst this is relatively straightforward with the

right technical know-how, it can be a trial-and-error process to get it right. This set-up will need to be done on every student's laptop (as well as linking Microsoft Outlook to their server for use remotely) so this could become quite problematic in comparison to a tool such as Google+ Hangout or GoToMeeting where they can just log in to the online programme.

3.4 GoToMeeting

Figure 4: Multi-point call in GoToMeeting. Source: http://themelvillegroup.com/2011/02/gotomeeting-hd-faces-beta-first-look/

GoToMeeting is a web-hosted service created and hosted by Citrix. The programme is very simple to use and quite intuitive so even if students are unfamiliar with the service, they should be able to use it without too much trouble. The programme is web-based so it does not run on its own server, although participants do need to download a client in order to join a meeting.

GoToMeeting allows the host to set up a meeting and then invite participants via email. The participants follow a link and type in a specific code which (after downloading the client) will allow them to join the meeting. The meetings are very intuitive and allow document editing, screen-sharing and audio recording. Apps can be downloaded for iOS and Android which would allow users to use GoToMeeting remotely. The standard account allows up to 25 participants in a videoconference at once.

The main disadvantages with GoToMeeting lie in its inability to record video (it only records audio) and its price (GBP 35 per month). Only one host needs to pay the price so it would be

free for all other participants. This means that the project could purchase a generic 'GoToMeeting' log-in which could be used for the recordings but this would prevent students from being able to use GoToMeeting in their own time. This would be a significant disadvantage given that fostering and facilitating self-study is one of the principal tenets underpinning the EVIVA project. The monthly subscription fee would also make it less sustainable after the end of the project.

3.5 BigBlueButton

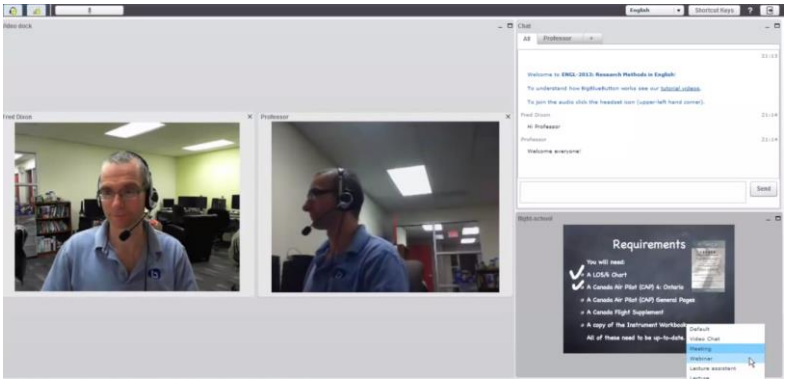

Figure 5: Person-to-person call in BigBlueButton. Source: www.bigbluebutton.com

BigBlueButton (BBB) is an open source web conferencing system that has been developed principally for distance learning. Although it is open source, it needs to run on its own server on Ubuntu 10.04 32-bit or 64-bit and can be installed either from source code or from Ubuntu packages. Aside from this, BBB has many advantages that would make it suitable for use in the EVIVA project.

BBB allows an unlimited number of people to make a video call at one time (but a maximum of 25 participants is recommended), allows screen-share, in-call document editing, and offers out-of-call document storage. The VC sessions can be recorded and played back and the software is free to use. Finally, the system has been designed entirely for the purpose of online learning so it should be relatively suited to the needs of the project.

However, problems with how the software can be downloaded, maintained and accessed make the use of BBB very difficult due to each institution needing to host the system on an Ubuntu 10.04 64-bit server. BBB is not able to download onto Windows or OS X (though can be accessed through these systems when hosted on an Ubuntu 10.04 64-bit server) and is not currently available to access via iOS or Android (though work is underway in this area).

3.6 Jitsi

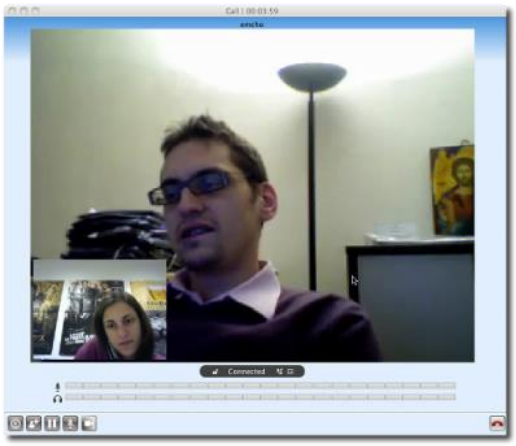

Figure 6: Person-to-person call in Jitsi. Source: http://www.voip-info.org/wiki/view/Jitsi

Jitsi is a free and open source multiplatform VC system which was principally developed as a more secure alternative to Skype. Jitsi links to the user's email or social media account in order for contact lists to be easily imported. It allows multi-user conference calls, call recording (audio only), and is available on the android network. However, video recording is not yet in development and it is not available on iOS.

The main issue with Jitsi, however, is that even though it is very easy to install, it is very difficult to use. It seems that the codecs/plugins that are needed differ depending on whether the user is working on a home or shared network. This made trialling Jitsi problematic as it was not apparent which codecs/plugins were needed to download and install the programme.

4 Comparison of videoconference environments for the Evaluation Studies

Based on the overview of the videoconference environments above, the following table highlights the main criteria required for the EVIVA Evaluation Studies:

VC/Criteria	Skype	Hangouts	Microsoft Lync	GoToMeeting
Multiple participants	Yes but only on a premium account only (see below for cost).	Yes, up to 15 at a time.	Yes, can have up to 250 participants.	Yes, up to 25 with standard account.
Ability to share/edit docs	None, but ability to group screen-share on premium account	Documents can be uploaded and accessed on the 'Google Drive'. These documents can be edited in-call by all users. Screen-share also available.	Documents can be viewed and edited within call by sharing your screen and allowing users control.	Yes, via screen-share.
Cross platform availability	Fully available on almost every popular platform.	Available on most platforms – which features are available may need to be tested though.	Available on Android and iOS as long as link to Lync server (see below).	Available on both android and iOS.
Ability to record VC sessions	Free apps available to record Skype audio but video recorders cost around £20.	Ability to record if hangout is 'on-air' which means it is publicly available on YouTube.	Very easy to record sessions and watch them back later – all stored on 'presenters' computer and automatically converted to WMV file format.	Ability to record audio but not video.
Usability – both setting up and in-call	Very easy - most students will already be familiar with Skype.	Quite easy; however, this isn't a social network that students would already be a part of so there would be a small learning curve.	Easy to use as it links to the users outlook. Easy to record and share screens. Quite tricky to install on users laptops due to server firewalls etc.	Very simple to download and use. Only one person needs to have a paid account to invite others to use.
Material storage and access for students	No storage	Material can be stored on Google Drive and accessed in- and out-of-call	No storage	No storage
Cost	£3.50 per month (+£20 video recording)	Free (+ 3rd party recording)	Free	Expensive - £34.80 per month.

Table 1: Comparison of videoconference environments for the Evaluation Studies

5 Recommendations

Based on the brief overviews (given above) and the thorough testing of these VCs as they would be used in the EVIVA evaluation, it is recommended that either Microsoft Lync or Google Hangout would be optimal VC services to be used in the EVIVA project, on account of their cost, quality, functionality and ability to record. Of these two VC systems, the final decision will depend on whether the evaluating partners have a Lync service currently running in their institution. If this is the case then, due to its ability to link with the students' existing email accounts, Lync may be the VC system most suited to use in EVIVA. However, it may also be worthwhile to introduce all students to Google Hangout (even if Lync is installed on all the institution's servers) as it can be used with people outside of the university network for interpreting practice.

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