



Conversations, Conferencing and Collaboration:

**A UK investigation of factors influencing
the effectiveness of distributed meetings**

Anna Mieczakowski, Joy Goodman-Deane,
Jeff Patmore and John Clarkson

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Executive Summary

Modern technology has made great changes to the way businesses work. In particular, business meetings no longer need to be held face-to-face. People from distant locations can communicate through technology, rather than wasting hours or even days in travelling. But are distributed meetings effective? This report investigates the factors that make a distributed meeting more, or less, effective and makes recommendations about how to improve them.

The study investigated both factors to do with the *Technology* and those associated with the *People*. It reviewed current literature on the subject, interviewed experts and experienced professionals, and conducted an online survey of 100 conferencing technology users in the UK.

The research showed that audio-based solutions are still the most frequently used conferencing technology, with 78% of survey respondents using them regularly. It is, therefore, not surprising that when asked the question – what are the factors that impact on the effectiveness of a distributed meeting? – almost 80% of respondents chose ‘having good sound quality’, which was second only to ‘using reliable conferencing technology’.

A number of specific challenges were found to be associated with traditional audio conferencing services relative to face-to-face meetings: (1) difficulties in identifying who is speaking; (2) problems with people ‘tuning out’ or multi-tasking, often resulting in the need for repetition of items; (3) difficulties in making oneself heard, particularly when trying to cut into a conversation; and (4) the challenge of creating a pleasant social experience at distributed meetings, to encourage team-bonding and engagement. Furthermore, when asked about the barriers to adopting new technologies, many of the survey participants expressed concerns about issues such as cost (53%), the effort required in integrating a new system (18%) and security (8%).

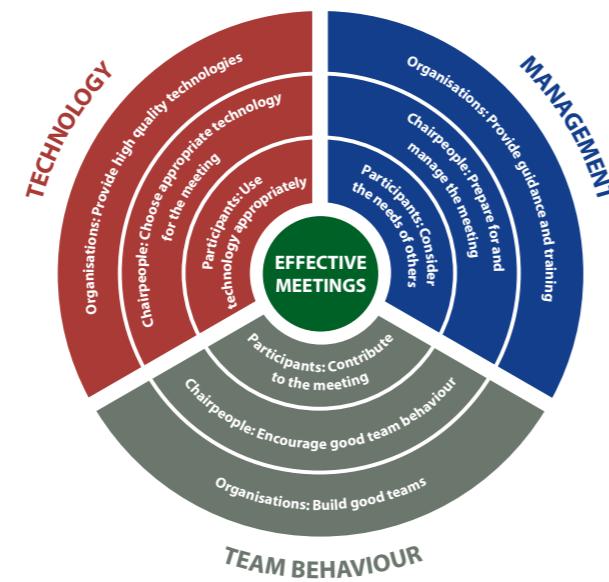
Foreword

In today’s economy, the best results are achieved by teams that collaborate on a global scale. We are a world leader in communications technology that enables better collaboration. We believe that better quality, readily available and cost effective tools will always deliver a better, more sustainable outcome.

Our partnership with Dolby is testament to our commitment to helping our customers collaborate more efficiently.

Working with the University of Cambridge and other leading experts from around the world, we have understood how to reduce barriers in global collaboration. This is valuable insight into how we work together across widespread teams and how best to deal with the challenges.

As a leader of a global enterprise myself, I am passionate about the use of collaboration technology. They are critical to the efficiency and success of BT Global Services as they are to many other global businesses. But they only work well when they are



simple to use and effective at what they do.

I would like to take this opportunity to say thank you to our colleagues at Dolby and the University of Cambridge. In these uncertain times, it is through true collaboration that we are able to succeed.

Luis Alvarez
CEO BT Global Services

It is clear from this that good quality technology is very important in ensuring an effective meeting. However, it is not the only thing that matters. The study identified issues to do with both *Technology* and *People*. These can be categorised into three main factors: *Technology*, *Management* and *Team behaviour*. As mentioned above, the *Technology* used in a distributed meeting has a great impact. Poor technology can make meetings ineffective and waste both the valuable time of the participants and company resources. The *Management* of a project and an individual meeting also has a big impact on meeting productivity. Good management can help teams to work well together, cover the important points and make efficient decisions. *The behaviour of the participants* can also improve, or detract, from a distributed meeting. This has implications on team work and individual behaviour, both within a particular meeting and across a project more generally.

These three factors can be influenced by people at all levels of an organisation. In particular, we identify three groups that have a part to play in ensuring that distributed meetings are run productively: the *Organisation* as a whole, the *Chairpeople* and the *Participants*. *Organisations* can provide high quality technologies, produce and widely disseminate guidance and training on how the meetings should be run, and can help to build well-gelled teams. *Chairpeople* can choose appropriate technology for their particular meetings, prepare for and manage those meetings well, and encourage good team behaviour. Lastly, the *Participants* in a distributed meeting can improve the meeting by making appropriate use of the technology, considering the needs of others and remaining attentive throughout.

Ultimately, by developing and exploiting the appropriate roles of *Technology* and *People* within distributed meetings – **using high quality communication technology, employing effective management approaches and encouraging good team behaviour** – organisations will not only achieve greater productivity in business terms, but also save both time and money.

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CHAPTER 1 Introduction

Conferencing technology has been available as a commercial service in the UK since the early 1980s when BT's *Rendezvous* operator-based conference call service was first introduced. The growth in usage of teleconferencing has since accelerated rapidly, with the completion of a fully digitalised telephone network and accompanying modern communications technology. Now, a vast number of business meetings are being held everyday over multiple locations, rather than face-to-face. These distributed meetings can reduce travel costs and save both time and money. However, it is the matter of some debate as to whether, and in what circumstances, such meetings can be as effective as meetings held face-to-face. What is clear is that the level of effectiveness is not uniform across distributed meetings, but can be influenced by a wide range of factors, some of which are easier to control than others. Identifying these factors can lead to suggestions for enhancing the effectiveness of such meetings.

This study used a variety of methods to examine the factors impacting on the effectiveness of conferencing meetings in the UK population, and their associated significance. A factor is anything that improves, or reduces, the productivity of a distributed meeting. It may be a characteristic of the technology, something to do with the way the meeting is managed, or other external, or internal, variables that have an effect on the meeting.

An initial literature review identified the main issues. This was followed by interviews with experts (Section 2.1), interviews with representatives of companies (Section 2.2) and an online survey (Section 2.3).



1.1 Types of factors

There are a large number of disparate factors that influence the effectiveness of a distributed meeting. To assist in the identification and analysis of these influencing factors, it was important to identify a small number of key categories to describe them. However, despite there being a number of different ways reported which categorise such factors [e.g. 1, 2, 3], none of these covered all the factors identified in the literature. The categorisation proposed below is based on examining the set of issues as a whole, including those identified in the literature and interviews with experts and company professionals.

1. Technology

(i.e. issues to do with the video, audio or other technology used):

- Usability and ease of set-up;
- Sound quality;
- System quality;
- Technology features.

2. People

(i.e. how the team and project are managed and how the participants behave):

- Project management and the wider organisation;
- Participant and team characteristics;
- Meeting facilitation;
- Participant behaviour.

1.2 Technology factors

Technical issues can have a large impact on the effectiveness of a distributed meeting and are associated with a range of different factors, including:

1. Usability and ease of set-up

The ease of use of a system influences how well and effectively it is used in practice [4]. For distributed meeting technology, this covers how easy it is to book and set up a meeting, as well as how easy it is to operate the technology during the meeting.

2. Sound quality

The quality of the audio and video in a distributed meeting can have a large impact on the meeting, with audio quality being a particular challenge. Surveys of problems with distributed meetings found many complaints about audio quality, including lack of audio clarity, disruptive background noise, problems with speaker identification, and difficulty understanding when more than one person speaks at the same time [3, 5, 6]. Yankelovich *et al.* [3] found that such issues were highly correlated with meeting effectiveness.

3. System quality

Other aspects of system quality also influence the effectiveness of a distributed meeting. In particular, reliability of connections and software can be a problem. Other technical issues include the difficulty of managing the different pieces of equipment [7] and getting people online and heard [5].

4. Technology features

The choice of technology, including the choice of communication medium, is also an important factor. Studies have shown that the addition of good quality video can improve meeting effectiveness for some types of tasks and situations, while audio-only solutions can be just as effective in other settings [5, 8, 9]. There are also additional technology features which can add to the meeting, including: facilities to share and view documents and visual materials (e.g. Cisco WebEx); icons that identify the current speaker [e.g. 10]; and lists of who is currently on the call [e.g. 11, 12]. Improvements to audio can also improve meetings. For example, studies show that spatial audio, which makes speakers' voices appear to come from different locations in space around the listener, can improve people's ability to identify speakers [13, 14, 15]. It also enhances speech intelligibility [16], particularly when multiple speakers talk at once [17] and there is background noise [18].



1.3 People factors

There are many factors relating to people that influence the effectiveness of a distributed meeting, including wider organisational issues, such as how the team and project are managed, and individual issues associated with how meeting facilitators and participants behave.

1. Project management and the wider organisation

Project management plays an important role. Ding *et al.* [12] note the significant amount of effort that “*is going on behind the scenes – by moderators, individuals, and organisationally defined subgroups – to create a coherent and productive meeting*”. In particular, the scheduling and organisation of meetings is important, with short and regular meetings proving most effective [2, c.f. 9]. It is also important to choose the right type of meeting for the right task, as studies show that distributed meetings are more effective in support of some types of tasks, such as information transmission and brainstorming, and not very productive in support of others, such as negotiation [8, 9].

2. Participant and team characteristics

It is important that participants in a distributed meeting are ready to work in a distributed manner and with the technology required [5]. Their ability to cope with technology-related challenges and their attitudes towards technologies and practices can have a big influence on the outcome of the meeting [2, 19]. Good team cohesion is also very important [2, 5, 20]. Teams with common ground [5] and pre-existing strong social bonds [21] often work more effectively. There are measures that can be taken to improve team cohesion, such as providing opportunities to socialise [19], using team-building exercises and meeting face-to-face at the start of a project [2].

3. Meeting facilitation

The meeting facilitator or Chairperson can do much to improve a distributed meeting [22]. Interaction Associates [23] give various recommendations for the Chairperson, including polling the group, using names and giving a commentary for remote listeners. Yankelovich *et al.* [3] note that facilitators should check for audio problems and that not doing so could cause issues. They also noted the importance of adequate advance planning.

4. Participant behaviour

The behaviour of individual participants also plays an important role. Yankelovich *et al.* [3] found that not following good meeting behaviours (such as identifying oneself when speaking) caused problems, although this was not as highly correlated with meeting effectiveness as audio or technical problems. Furthermore, when participants do not concentrate on a call (e.g. by checking e-mail at the same time), this impedes their memory and knowledge retention [24]. Interaction Associates [23] also advocate establishing ground rules (etiquette) for meetings.



CHAPTER 2

The Research

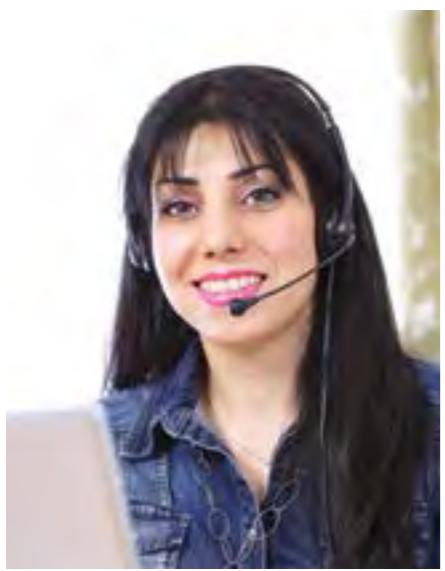
The literature presented in the previous chapter identified a large number of influencing factors. Further research was conducted to establish which of these factors were the most important and how they were relevant in the UK today. The key question was:

What are the factors that most influence the effectiveness of distributed meetings?

In order to answer this, the research employed three complementary methods:

1. Semi-structured interviews with five multidisciplinary experts;
2. Semi-structured interviews with representatives of ten multi-sector companies with extensive experience of conferencing;
3. An online survey of 100 professionals with some experience of distributed meetings.

These methods are described in further detail in the following sections.



2.1 Interviews with experts

Five interdisciplinary experts were interviewed in order to expand on and deepen the understanding developed through the literature review, which had identified issues relating to both *Technology* and *People* aspects of conferencing. Therefore, the experts were gathered from both technological and more people-oriented sectors, and included:

- Steve Brewster, University of Glasgow (multimodal human-computer interaction);
- Paul Dourish, University of California, Irvine (computer-supported cooperative work);
- David Good, University of Cambridge (psychology of human communication);
- Brian Moore, University of Cambridge (auditory abilities and speech perception);
- JoAnne Yates, Massachusetts Institute of Technology (management and communication and information technology).

These experts were selected to provide the broadest possible range of perspectives on effective teleconferencing, each being able to share uniquely informed views and insights. The experts are renowned in their respective fields and their opinions are formed not only from their own research, but also from the research and contributions of others in their disciplines. Their views were elicited using a semi-structured interview method and mapped to the main points relating to the *Technology* and *People* aspects of conferencing using the general inductive analysis approach [25].

2.2 Interviews with companies

Interviews were also conducted with ten representatives of UK-based organisations. These included both large and small-to-medium sized companies from the following sectors: engineering, insurance, banking, entertainment and technology, government and education. The interviews investigated participants' experience and opinions of the effectiveness of distributed meetings, and were subsequently analysed for emerging patterns in data and coded using the general inductive analysis approach [25].

The interviewees had between four and 25 years of experience in using conferencing in their work and most had experience of chairing meetings. The frequency of their participation in distributed meetings varied from once a week to several times a day. The size of meetings also varied widely, with some respondents participating only in small meetings with up to four people, while others regularly attended calls with up to 30 people. Respondents also used a range of technologies, including telephone conferences, document sharing technologies and immersive video conferencing suites. Most interviewees stressed that, in the modern world of business globalisation, internationally-run distributed meetings are of high importance in their work.



2.3 Online survey

An online survey was conducted to get a wider view of how professionals use distributed meetings in their daily work. Approximately 450 professionals, who used conferencing regularly, were initially contacted by a recruitment agency. The survey was closed once 130 responses had been received, of which 30 were partial responses that could not be used. The remaining 100 responses were analysed using descriptive statistics.

Survey respondents worked in different parts of their companies, including: Customer Service (19), Information Technology (18), Finance (17), Marketing (14), Administration (13), Sales (11), Human Resources (9) and Other (18). Some respondents worked in more than one area. Respondents had differing levels of experience with distributed meetings, with 45% having over five years of experience, 19% between three and five years, 26% between one and three years, and only 9% with less than a year of experience. There was similar variation in frequency, with 10% typically engaging in distributed meetings many times a day, and 16% about once a day. 26% of respondents participated in distributed meetings less than once a day but at least once a week, and 26% less than once a week but at least once a month, while 21% used it less frequently than once a month. Most of the distributed meetings conducted by the respondents had up to 10 attendees (82% of responses) and lasted between 30 minutes and one hour (59%). 15% of people said both that their average meeting took less than 30 minutes and up to one-and-a-half hours.



CHAPTER 3

Overview of Findings

This section presents an overview of the findings as they relate to the key research question:

What are the factors that most influence the effectiveness of distributed meetings?

3.1 Factors that influence the effectiveness of distributed meetings

Fifteen overarching factors were elicited from a review of literature and interviews with experts and company professionals. A factor was defined as any tangible aspect of technology and people behaviour that improves, or reduces, the effectiveness of a conferencing meeting. These factors were presented to the survey participants, who rated them on a five-point scale according to the impact they have on distributed meetings (from no effect to high effect). The results are shown in Figure 1.

How much do the following factors impact on the effectiveness of distributed meetings?

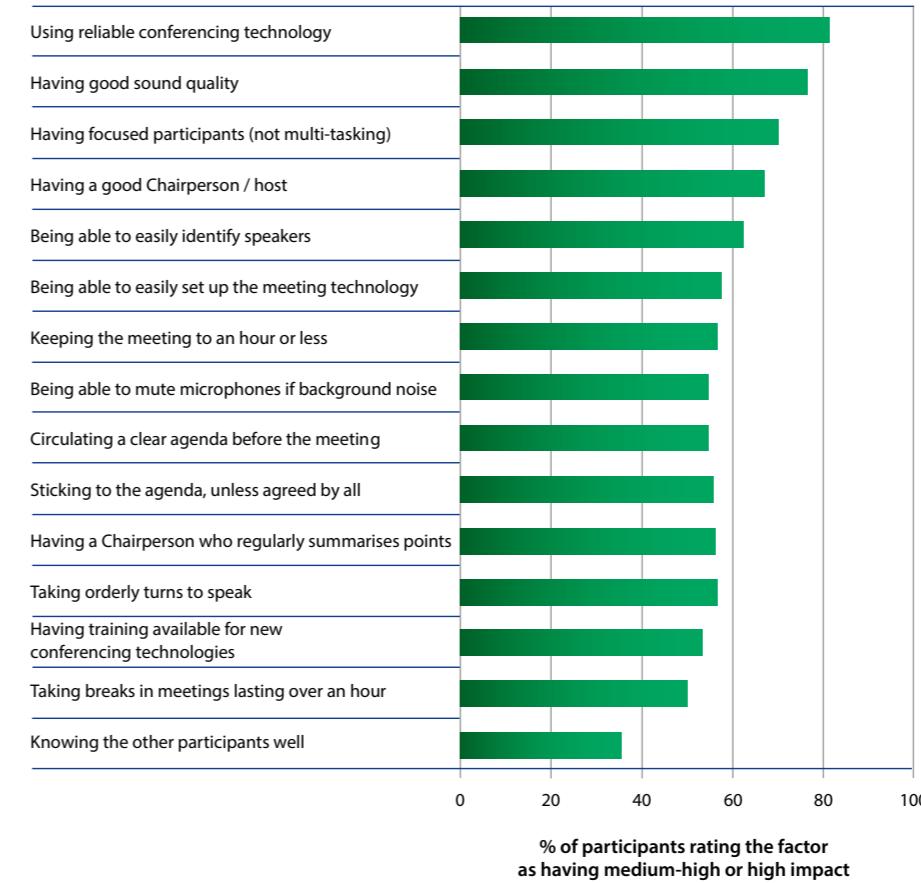


Figure 1: Ratings of the impact of 15 factors on the effectiveness of distributed meetings.

Thirteen out of the 15 factors were rated as having a medium-high or high impact by over 50% of participants. This indicates that there is no one single panacea to running an effective distributed meeting. Rather a number of factors have to work together. The factor with the highest impact score was 'using reliable conferencing technology' (rated as having a medium-high or high impact by 81% of respondents). 'Having good sound quality' was a close second (77%), with 'having focused participants (not multi-tasking)' in third place (72%).

These factors are discussed in more detail in the *Technology* (Chapter 4) and *People* (Chapter 5) sections of this report.

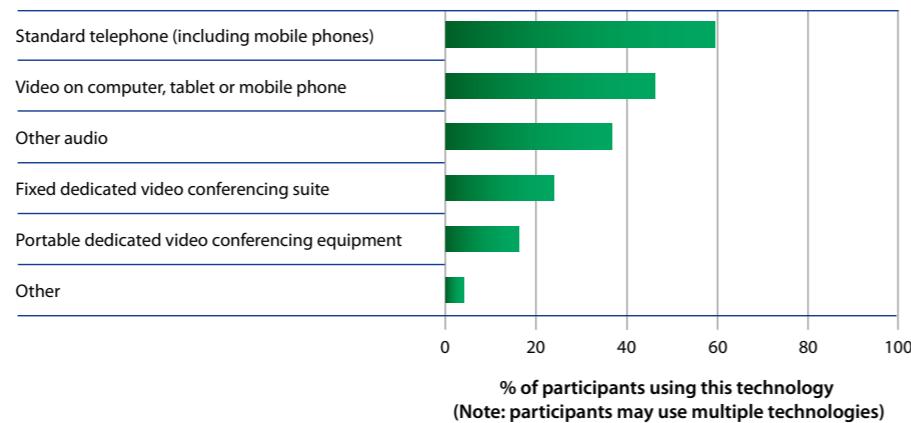


3.2 Technologies used

The factors affecting the performance of a distributed meeting may vary depending on the technology used in that meeting. Therefore, it is useful to examine what technologies are actually used. The results from the survey are shown in Figure 2. The most common conferencing technology was the standard telephone (including mobile phones), used by 59% of survey respondents. In fact, 78% of respondents used audio-only conferencing solutions (including both standard telephones and other audio technology).

Figure 2: Technologies used in distributed meetings.

Which technologies do you use regularly in distributed business meetings?



3.3 Influences on audio meetings

The high incidence of audio-only meetings suggests that it is worth examining further the factors that influence these types of meetings. Consequently, survey respondents were asked about the interventions that they felt would improve audio meetings. They also answered an open-ended question about the improvements to audio conferencing technology that they would like to see.

Figure 3 shows the results when participants were asked what would improve the efficiency of their audio-based meetings. They could select three improvements, although some only chose two. The highest ranking improvement was 'high quality sound' (chosen by 48% of participants), with 'reliable technology' a very close second (47%), and 'easy speaker identification' third (39%).

What would improve the efficiency of your audio-based distributed meetings?

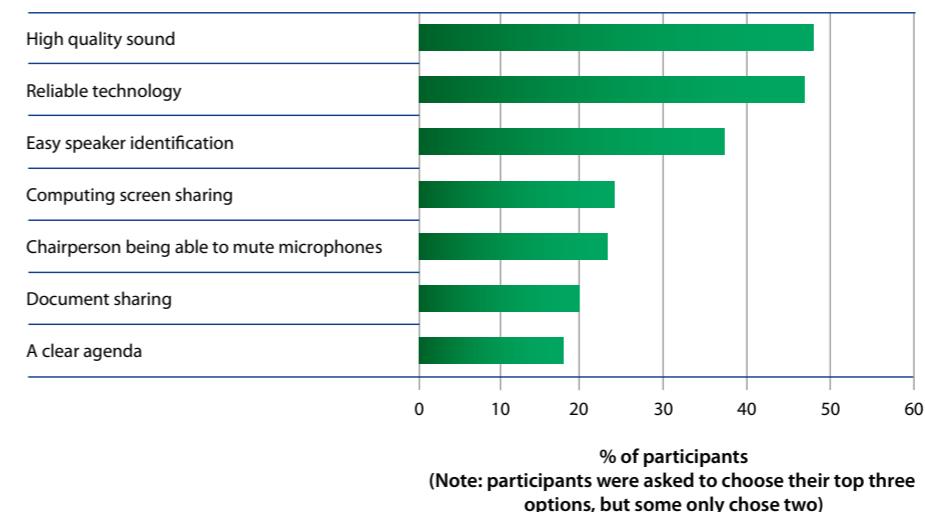
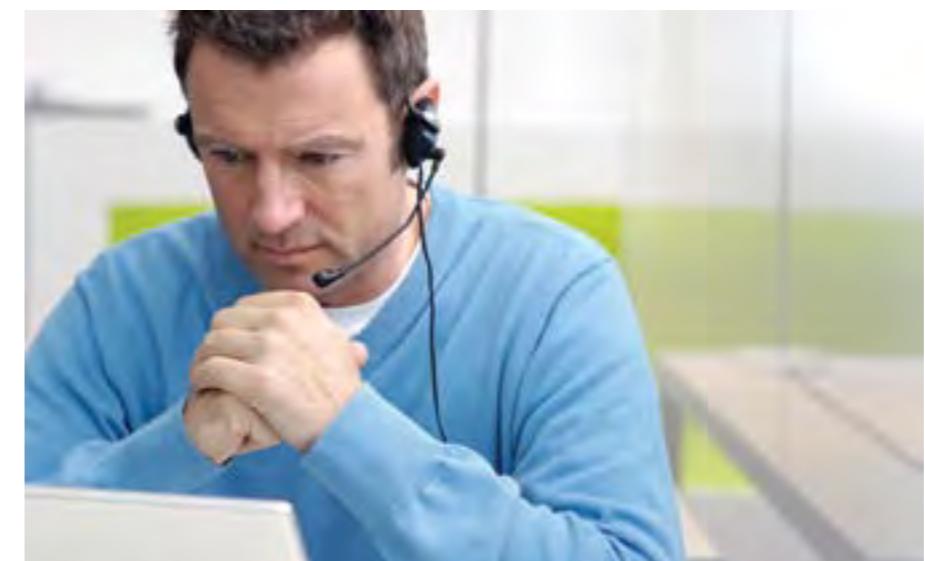


Figure 3: Interventions that would improve the efficiency of audio-based conferencing.

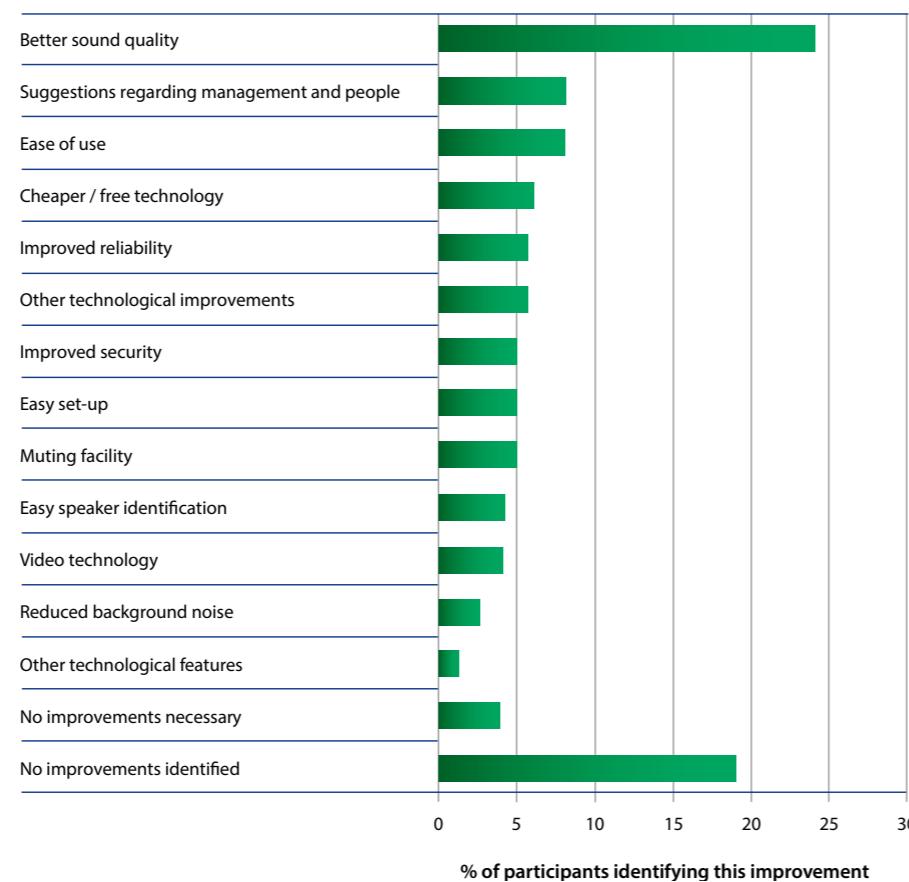


Respondents were also asked what single improvement would encourage them to use audio conferencing more. This question was open-ended, with participants being able to answer in their own words. The responses were categorised and the results are shown in Figure 4. By far the most prevalent category of response was 'better sound quality', identified by 24% of respondents. The next category, 'suggestions regarding management and people' was only mentioned by 8% of respondents and actually consisted of a range of suggestions, including better co-ordination of agenda and chairing, limiting the number of people in a meeting and being allowed to work from home. 'Ease of use', 'cheaper / free technology' and 'improved reliability' were also mentioned by several people. In addition, 4% of people said that no improvements were needed, and a further 19% chose not to identify any improvement.

Figure 4: Categories of responses when asked what one improvement to audio conferencing technology would encourage respondents to use it more often.

What is the one improvement to current audio conferencing technology that would encourage you to use it more often?

(Respondents replied in their own words and responses were categorised)



Interestingly, participants rated the same two factors highest when discussing both overall conferencing technology (Figure 1) and interventions for audio conferencing in particular (Figure 3). In both cases, 'better sound quality' and 'reliable technology' formed the top two options, but not in the same order. 'Better sound quality' was also the audio conferencing improvement identified most often in the open-ended question (Figure 4).

3.4 Barriers to adoption of new conferencing technologies

Survey respondents were also asked for their opinions on the overall barriers to adoption of new teleconferencing interventions. Figure 5 shows that the main deterrent was 'additional cost', identified by over half (53%) of respondents. 13% of respondents did not provide a definite answer, while 10% of people chose 'difficulty learning a new system'.

What is the main thing stopping you from adopting new teleconferencing technologies?

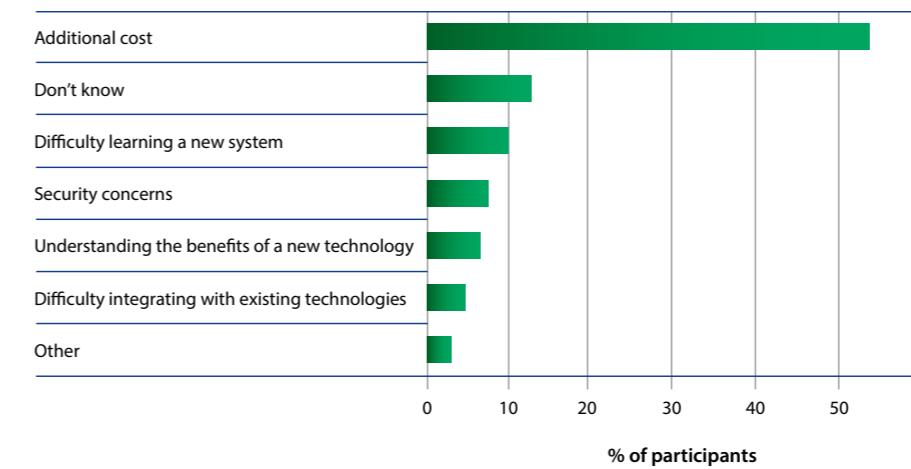


Figure 5: Main factors stopping adoption of new conferencing technologies.



CHAPTER 4

Technology Issues

The previous chapter gave an overview of the factors influencing the performance of distributed meetings. This, and the following, chapter expand on the individual factors in more detail, starting with those related to *Technology*.

The study previously found that various *Technology* factors impact on the effectiveness of distributed meetings (see Chapter 1), namely:

- Usability and ease of set-up;
- Sound quality;
- System quality;
- Technology features.

The following sections discuss these factors in more detail, drawing on the results of the interviews with experts and company representatives, and the online survey.

4.1 Usability and ease of set-up

The ease with which a distributed meeting can be set up is a key factor in its effectiveness, with 59% of the survey respondents rating it as having a medium-high or high impact. This agrees with findings from the company interviews. 50% of the interviewees mentioned having problems setting up distributed meetings, and one interviewee said: *"The biggest problem of all is set-up. So good discipline for anything that is remotely complex is to schedule a pre-set-up... [It is very important] to have the technology, typically, always there and working at the time when the meeting is supposed to start"*. Furthermore, 30% of those interviewed indicated that a complicated set-up actually resulted in a reduced use of their conferencing systems. Problems with set-up included difficulties with booking and accessing a limited number of video conferencing suites.

Two of the interviewed experts also touched on this issue, highlighting the importance of the convenience and availability of teleconferencing technology. As said by one expert: *"There's no value in my having a high-end conference set-up if my colleague is on a Wi-Fi network in China with a laptop and is happy to Skype in"*. It is vital that the teleconferencing systems allow participation through the multitude of communication devices used in different countries and by employees working remotely. As explained by one of these experts: *"monolithic solutions that tend to presume particular kinds of configurations don't operate very effectively"*.

The availability of the technology is also related to its cost. *"Probably at the back of the university somewhere there's a video conferencing suite that they set up at great expense a few years ago, but no-one uses that stuff any more, even though it was probably better, because Skype is cheap and free. So in the end it's a default to Skype"*, said one of the two experts.



4.2 Sound quality

The online survey found that sound quality was one of the top two factors impacting on the effectiveness of a distributed meeting (Chapter 3). The expert interviewees agreed: four of them said that poor audio quality of teleconferencing systems was a barrier to running an effective distributed meeting. This was because poor audio quality made it harder to understand who was speaking and what was being said, and in what emotional tone, leading to increased stress levels of the participants. In particular, one expert explained that poor sound quality affected speech intelligibility, making sound unnatural and harder to understand. This put a load on the listener's hearing and thinking capabilities, resulting in tiredness and impaired recall of items and decisions discussed in the meeting, as well as having a negative effect on secondary tasks such as note-taking. Two other experts agreed, explaining that good audio quality resulted in easier identification of voices and specific tones, and placed less load on the cognitive capabilities of participants. One of them additionally described the difficulties of getting audio "right" and said that poor audio had more of a negative impact than poor video.

Accessible and clear sound was argued by one expert to be particularly important for older people with some hearing loss. One simple way of improving accessibility for this group is to add a slight amplification to the higher sound frequencies.

The high significance of sound quality in distributed meetings was also reported by 50% of company interviewees. One company respondent complained: *"If you've got people not hearing, having to repeat things... then it's a poor quality experience really"*. Another respondent lamented: *"If there's poor audio you're having to concentrate incredibly hard just to hear what they're saying, let alone actually interpreting what they're saying and understanding what it means to you and responding to it"*.



Another real issue for 40% of those interviewed was 'background noise'. One interviewee explained: *"Background noise is a constant headache, so people dialling in from busy offices or dialling in from a car or from an airport and you get a lot of background noise or interference. That's always a pain and that can ruin a lot of teleconferences"*. One way of dealing with this was for teleconference attendees to mute their microphones when based in a noisy environment, but people did not always follow this rule.

4.3 System quality

Although the issue of reliability was not directly discussed by the interviewed experts, it was a big concern presented in the company interviews and the online survey.

The reliability of the conferencing technology was reported by the company respondents to be a key issue, with 60% of them expressing their frustration with calls that 'drop out'. This problem was typically triggered by attendees joining the meeting via mobile phones. One interviewee stated: *"The number of times the mobile phone will drop out, I mean it is just, in 2013 quite honestly, it is just unbelievable"*. Another interviewee argued: *"It's essential that it [the technology] is reliable, it doesn't distract people from the content of the meeting, the subject of the meeting, the objective of the meeting, which unfortunately still happens too frequently"*.

Another crucial aspect of teleconferencing, often brought up as an issue, related to security. One expert suggested that many organisations prefer not to use mainstream teleconferencing software, such as Skype, because it is not perceived as being secure in the business environment.

4.4 Technology features

The different features of conferencing technologies and their impact on the effectiveness of distributed meetings were widely discussed in both the expert and company interviews.

Interestingly, one expert indicated that different conferencing technologies were suitable for different types of meetings with varying levels of formality. For example, specialised conferencing set-ups were said to be more suitable for scheduled corporate meetings than for everyday casual meetings. One expert also stressed the importance of having technology that would recreate the natural echos of a conferencing room in order to create a more immersive feeling.

4.4.1 Speaker identification

The significance of speaker identification was presented in the literature. Therefore, it was deemed important to further investigate how easy it was to recognise speakers in distributed meetings. The ability to identify who is

speaking at a given time during a discussion can impact other participants' understanding of whether the speaker has the authority or expertise to back up their statements and whether all attendees shared their opinions. Therefore, both qualitative (expert and company interviews) and quantitative data (the survey) were collected relating to the degree to which speaker identification was a problem in conferencing meetings.

The experts agreed that speaker identification can be a problem. While the received wisdom in distributed meetings is to say one's name when starting to speak, participants rarely follow this rule and often say their name quickly and not very clearly, leading to difficulties in speaker identification. As put by one expert: *"The problem is people often forget about identifying themselves, they think that everyone knows who they are and the more important they are the more they think that everyone ought to know who they are. So they do not identify themselves"*.



The ability to signal one's intent to speak and identify other speakers' voices, potentially via a simple graphical user interface (e.g. by highlighting a photo of the speaking person or their name), were considered by two experts to be greatly beneficial to the effectiveness of a distributed meeting. The ability to deliver these features efficiently appeared to be further amplified in larger meetings. According to another expert, speaker identification was particularly challenging in low quality audio conferencing. The ability to easily identify speakers was also said by one expert to be of a more prominent issue in larger meetings with unfamiliar people.

50% of company interviewees viewed speaker identification as an important aspect of an effectively run distributed meeting, with 80% of people also saying that it is a larger issue in audio-only meetings. One interviewee expressed the following concern: *"That's [speaker identification] a huge issue... Particularly with audio conference... If you've got a dozen people on there and by the time the codecs have done their work on compressing the voice, you can't tell one person from another. [Easy] Speaker identification, absolutely would be fantastic"*.

The online survey results also show that 46% of the UK respondents felt that speaker identification was 'sometimes' a problem, followed by 24% of them saying that it was 'rarely' a problem, and 14% 'never' encountering it as a challenge.

4.4.2 Spatial audio

Three experts believed that spatial audio (also called voice separation) would be a useful technological intervention in distributed meetings to assist speaker identification. Spatial audio is a type of audio where sounds appear to originate from different locations around the user. For example, the speech from one speaker would appear to come from the left of the listener, while another person's speech would appear to come from his or her right.



Separating the audio from different people was perceived to improve audio quality and intelligibility, and make it easier to identify and distinguish the different speakers and determine what each of them had said. *"An issue with audio not being spatialised is that the [human] audio system can't take advantage of being able to separate out those streams and then process them independently, because everybody's mashed together into one single audio source... That's why spatial audio makes sense for conferencing and many other audio applications"*, stated one expert. This opinion resonated with that of another expert, who commented that spatial audio is useful for helping teleconference attendees orient to the right person (i.e. the person who is speaking): *"It's important to provide appropriate spatial information so when a new person starts talking, the person in the remote location will know which direction to orient to, to latch on to that talker"*. Similarly, a third expert argued that the aspect of spatial audio that would make the biggest difference in conferencing is higher quality of audio and a clear separation of voices, rather than the spatialisation per se.

One of the experts also added that spatial audio is better at separating audio sources than the commonly used mono streams and the stereo available in fixed conferencing suites, because the latter solutions are *"still not using all the capabilities of your [cognitive] audio system"*. Moreover, this expert was of the opinion that exocentric spatial audio (i.e. where the audio is fixed in space rather than relative to the listener and requires head tracking) could positively impact the effectiveness of distributed meetings. However, this proposed intervention would require some equipment for head tracking (e.g. accelerometer or camera).

Spatial audio was also commented to have its caveats. Two experts suggested that spatialisation could be more useful in some kinds of meetings than others. For example, it was believed to work better in smaller meetings with up to six participants.

4.4.3 Other features

One expert proposed that it would be useful to have a function to allow note-taking to be visible to all attendees. Following the theme of nice-to-have technology, another expert also argued the need for being able to share documents that attendees are working on.

Regarding the audio versus video debate, one expert posited that while video does not offer immediate benefits, it does allow everyone to have a more positive emotional experience, giving a sense of participation and mutuality particularly in long meetings. This opinion resonated with two other experts. One of them appeared to be unconvinced with the idea that: *"video adds very much, but there may be circumstances"*. The second expert explained that video is, in fact, secondary to the audio and its usefulness depends on: *"what kind of meeting you're having and [how important it is to] see the other person's responses"*. Another expert argued that it is more difficult to get the mechanics of audio "right" and that poor audio has more of a negative impact than poor video: *"miking, ambient audio feedback... just the mechanics of making audio work is a killer"*.

Despite a profound belief that good audio quality had the biggest impact on the running of teleconferencing meetings, two experts chose multi-way video technology as the most effective piece of technology. One of them explained: *"Sometimes it [multiple video stream] is helpful, sometimes not, but I think there's something to be said for seeing the other person, even if it's massive blocky pixels"*.

Company respondents also talked about a range of technology features that they frequently used, including document sharing, screen sharing and participant identification. All of these were said to enhance distributed meetings to varying degrees as long as they functioned effectively. In particular, problems with accessing and using such features were said to often result in frustration. *"The number of times I've seen presentations castrated by the technology, sharing the desktop to remote screen"*, commented one company interviewee.



CHAPTER 5

People Issues

As well as *Technology* factors, various *People* factors impact on the effectiveness of distributed meetings (see Chapter 1), namely:

1. Project management and the wider organisation;
2. Participant and team characteristics;
3. Meeting facilitation;
4. Participant behaviour.

The following sections discuss these factors in more detail, drawing on the results of the interviews with experts and company representatives, and the online survey.

5.1 Project management and the wider organisation

Project management can have a large influence on a distributed meeting. In particular, the literature indicates that it is important to choose the right type of meeting and conferencing technology for the task at hand. The expert interviewees agreed, with one expert arguing that: "*audio conferencing does just fine*" for task oriented conversations, while face-to-face is more suited for "*developing the socio-emotional aspects*". Another expert added that different meeting technologies send different signals about the formality of the meeting. For example, conferencing suites that need to be booked weeks in advance indicate that a meeting is very formal.

The choice of meeting size also plays an important role. One of the experts argued that bigger meeting groups (with over six participants) were noticeably more challenging to manage: "*[In bigger meetings] it starts to get a bit difficult. People just tune out, because it's difficult to listen to what's going on, so they stop*

participating... Trying to get people to have their say and know who wants to say what... becomes more difficult when there's more people talking all at the same time". 30% of the company interviewees agreed that larger distributed meetings tend to be less effective, although one person noted that very large meetings can work well, if they are managed carefully.

Three experts also stated that the way in which different attendees were distributed could impact on the effectiveness of a conferencing meeting. An especially problematic situation occurs when just one person is remote and the others are placed in the same room. In particular, one of these experts said: "*When most of the people are in the same room they end up interacting with each other the way they do in person... it is hard to break in when you are the only one who is remote*". 30% of the company interviewees also mentioned that this is a particularly difficult situation. One respondent suggested that an effective way of dealing with this problem was a more equal separation of team members: "*We have actually made people in the UK, who dominate the workforce, split and go into different rooms, so that everybody has a very similar experience*".

Project managers also need to take care over the length of distributed meetings. 30% of company interviewees said that meetings of longer duration were more fatiguing, which, in turn, impacted on effectiveness. This was especially true for audio-only meetings where more effort is required to process and interpret speech. "*All your effort is actually on hearing. That's incredibly fatiguing even just for 10 minutes let alone a normal meeting length of an hour*", said one interviewee. Thus, 30% of interviewees suggested that it is important to limit meeting length. Survey respondents agreed, with 58% of them rating 'keeping the meeting to an hour or less' as having medium-high or high impact on the effectiveness of the meeting.

5.2 Participant and team characteristics

One expert suggested that an effectively managed meeting was not just defined by what happens during that one meeting, but that it was also about a wider team-working context: "*It's never about what just happens within the frame of the meeting... there's a sequence of moments before and after that contextualise what happens in that particular frame*". Similarly, another expert explained that the effectiveness of a meeting is influenced by how well participants know each other beforehand.

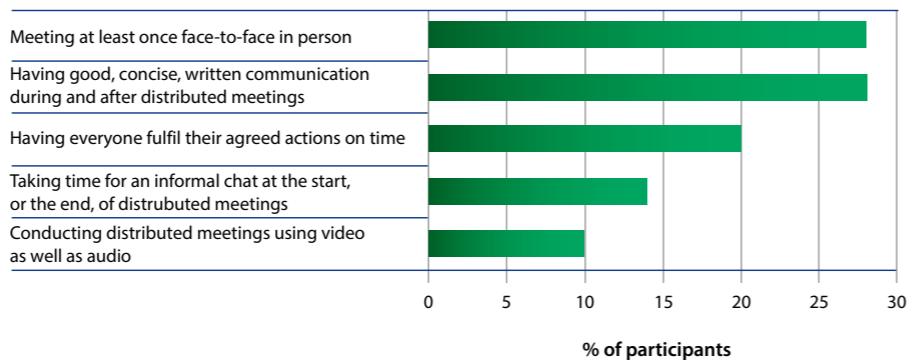
These social aspects of team relationships were explored in the company interviews, with 50% of interviewees explaining that it is difficult to build trust in distributed meetings alone, and 80% saying that 'face-to-face' meetings are better. It was generally considered that it was important for meeting attendees to meet 'face-to-face' at least once. Interviewees discussed how the richness of 'social interaction' and non-verbal behaviour that occurs in physical meetings cannot be easily replicated in distributed meetings. One interviewee explained: "*The normal social interaction that you would get face-to-face, which can include a lot of humour, it doesn't translate into telephone and electronic conversations...*



[humour] is breaking up the tension and providing some bonding. Actually none of that works when you're on the phone".

The online survey also asked respondents about the best ways to build trust in distributed teams. The results are shown in Figure 6. 'Meeting at least once face-to-face in person' and 'having good, concise, written communication during and after distributed meetings' were considered to be the top methods (both with 28% of responses). In addition, while it was not one of the main factors influencing the effectiveness of distributed meetings, 38% of people believed that meetings are more productive when participants know one another well.

Figure 6: Ways to build trust in distributed teams.



The issue of trust-building in collaborating teams was, moreover, reported by all experts. Most of them believed that it was hard to get to know people well when only interacting in distributed meetings, because of an absence of important non-verbal cues, such as eye contact and body language (unless teleconferencing for an extensive period of time). Many experts suggested that teams should always aim to meet face-to-face at least once, or have an offline chat. One expert said that mutual intelligibility and the ability to determine when someone was confused due to problems with understanding (rather than problems with the technology), were especially impaired in audio-only conferencing: "*It's the speed of responsiveness and the degree of queuing of what I do with what you do that gives a major insight into whether or not we're on the same wavelength*".

According to another expert, trust in teams could be built by sharing people's credentials ahead of time, or at the start of the meeting, and by getting everyone to participate in the meeting.

5.3 Meeting facilitation

Meeting facilitation is a very important factor in achieving an effective distributed meeting. 68% of survey respondents rated 'having a good chairperson / host' as having medium-high or high impact. Similarly, four out of five interviewed experts and 70% of company interviewees highlighted the importance of good quality chairing.

The interviewees described many tasks and roles that a good Chairperson should fulfil. For example, one expert stated that a Chairperson should ideally be "*polite but firm*", ensure that no-one dominates the meeting, identify those who have not said anything and try to "*get something out of them*", and should also be "*someone the other people respect*".

In summary, the expert and company interviewees felt that the Chairperson should: (1) have a carefully thought-through agenda with a clear purpose; (2) properly brief everyone on this in advance; (3) get everyone focused on the goals of the meeting from the outset; (4) introduce people and give them a chance to get to know one another; (5) manage turn-taking; (6) encourage everyone to contribute; (7) ensure all the topics are discussed and decisions made; and (8) move the meeting on, keeping it to time.

Turn-taking was a particularly important point. 90% of company interviewees believed that a key role of the Chairperson was to manage turn-taking and intervene if participants spoke over one another or one of them tried to dominate the conversation. One company professional said: "*People talking over other people and especially in negotiations, that can be a constant issue: people shouting over other people, and that can make it very confusing as to who is making which point. It often becomes a case that who is talking the loudest and for longest gets to continue it and make that point*". One expert also stressed the importance of managing turn-taking, especially in audio-only meetings, because: "*it's very easy for people to talk over each other, because they're missing all the social cues, somebody to support the turn-taking is quite important*". Turn-taking was, moreover, viewed by two other experts to be more challenging in audio-based conferencing, because non-vocal cues, which are absent in audio conferencing, are key to knowing who would like to speak. In addition, one of these experts argued that there was typically a lot of non-verbal communication between a group in one room, which was rarely communicated to remote parties.

Another key part of the Chairperson's role is to encourage all participants to contribute to the meeting and to remain engaged. This was mentioned by 90% of company interviewees. One interviewee who regularly chaired meetings said: "*I think, going round the table, asking questions and getting everybody to contribute, basically throwing out questions to individuals, is certainly one way of getting people to stay online and stay engaged*".

The subject of agendas was also raised by 50% of the company interviewees as an important aspect of meeting effectiveness, because it clarified for all attendees why they were in the meeting and what was expected of them. One interviewee described the importance of having a meeting agenda by saying: "*[It is important that] the purpose of the call [is] well understood by everybody. Everybody knows why they were there, everybody's been properly briefed with the information beforehand*". This was reiterated by another interviewee: "*Forget about the technology, having a clear agenda [is key]. People understanding why they're there is obviously crucial; understanding what their role is*".





It is clear that there are many aspects to being a good Chairperson. However, one expert commented that Chairpeople hardly ever enhance the management of meetings, because they are typically focused on the content of the meeting, rather than the manner in which it is to be delivered. Another expert suggested that currently there is a significant absence of a good guide to chairing, and that it would be useful if such a resource was produced. This is clearly an area where the effectiveness of distributed meetings could be improved.

5.4 Participant behaviour

The study found that the behaviour of individual participants, as well as the Chairperson, was an important factor of conferencing. Guidance produced by an organisation or the Chairperson on how the attendees are to behave in a meeting (sometimes called 'meeting etiquette') was said by one expert to be a vital part of every meeting, not just a distributed one. An example of such etiquette is the recommendation that participants say their names before speaking, in situations where technology is not available to help identify speakers. Chairpeople should also continuously reinforce such behaviour.

However, while having clear guidance on how to behave in a meeting is helpful, it is not sufficient, because, in the excitement to express one's point, participants often 'break in' and say something out of sequence. Therefore, it is vital that a good set of etiquette rules is coupled with an effective Chairperson in distributed meetings.

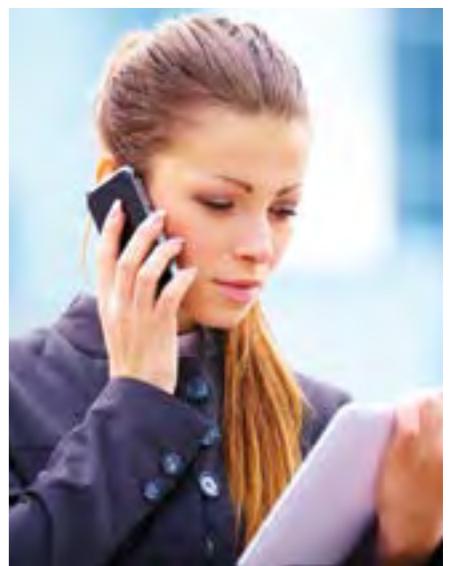
In particular, distractions and disengagement were perceived to be very problematic to meeting efficiency, according to three interviewed experts. This is often a by-product of a loosely-focused agenda with low relevance to some attendees. Furthermore, 30% of interviewees reported that multi-tasking can be an issue in audio meetings. Many were frustrated at having to repeat questions, because some participants had become de-focused as a result of carrying out other tasks: *"I think one of the most important things is to, somehow, make sure that you've got everybody's attention throughout the meeting. Particularly when*

you can't see them and they can mute their microphone and they can start writing emails, or whatever".

A further behavioural deterrent to distributed meetings is fatigue. 80% of company interviewees commented that fatigue can be a problem, especially in distributed meetings. Various things contribute to fatigue. As one expert explained, any type of meeting, including face-to-face, can be tiring. However, audio-only meetings were considered to be particularly fatiguing, because participants have to concentrate harder to understand what is being said without any visual cues. As one interviewee explained: *"You don't have the benefit of body language or other visual aids that you would usually have, [so] you have to concentrate a lot more to try and understand what they're really trying to say, as well as what they're actually saying"*. Three experts agreed that audio conferencing requires more concentration and expenditure of energy: *"It is quite fatiguing trying to separate out the different people, understand what they're saying"*, said one of them. While spatial audio was mentioned by this expert to be a useful intervention for decreasing participant fatigue, video was suggested by another expert to be a superior intervention: *"Video helps me hear better"*.

Some of the company interviewees explained that the fatiguing nature of audio conferencing is exacerbated by poor audio quality and background noise. Two experts explained that a higher demand is put on participants to decipher lower quality speech: *"Some of the cues in speech aren't there and you have to do more work to understand the speech. It takes more brain power to use the remaining cues"*. While intelligibility may remain high, people feel more tired, remember less and, as a result, other secondary tasks, such as note-taking, suffer.

Among the possible interventions for lowering tiredness levels in participants, high quality audio was the most prevalent, according to two experts. Spatial audio was argued to be the most impactful by both experts. In addition, one expert suggested that fatigue could be mitigated by taking regular five-minute breaks, provided that the Chairperson is good at time keeping, as well as limiting the length of a distributed meeting to one hour or less. Although the latter suggestion was likely to make it more difficult to discuss certain agenda items in depth, one expert believed that a potential solution was to: *"have regular meetings and in-between discussion"*.





CHAPTER 6

Recommendations

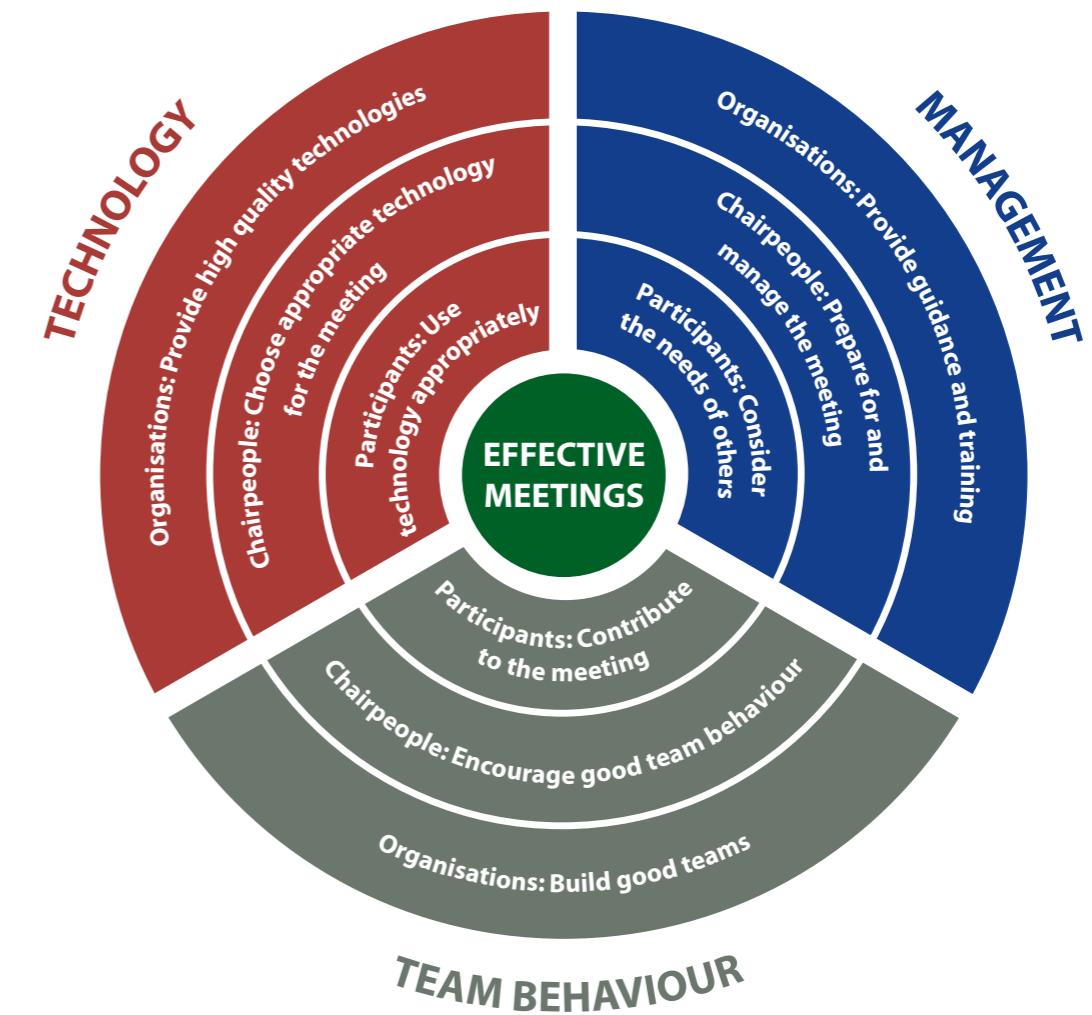
This section proposes recommendations for improvement, based on the results of the study. These recommendations address the main factors that influence the effectiveness of a distributed meeting: both those relating to the *Technology* and those associated with the *People* issues (see Chapters 4 and 5). These recommendations can be grouped into three main principles:

- **Technology: Use high quality communication technology**
The technology used in a distributed meeting has a large impact on its effectiveness. Poor technology can make meetings ineffective and waste the valuable time of the participants and company money. Technology should provide high quality sound, be reliable and be easy-to-use.
- **Management: Employ effective management approaches**
The way in which a project and an individual meeting are managed has a big impact on meeting effectiveness. Good management can help teams to work well together, cover the important points and make efficient decisions.
- **Team behaviour: Encourage good team behaviour**
The behaviour of people participating in a distributed meeting can improve, or detract, from that meeting. This has implications for team work and individual behaviour, both within a particular meeting and across a project more generally.

These three principles have different implications for different people within an organisation. In particular, there are three groups with a large part to play in a distributed meeting: the *Organisation* as a whole, *Chairpeople* and the *Participants*. While all three groups are important in delivering effective distributed meetings, some groups have more impact on some aspects of the meeting than others. For example, *Organisations* as a whole make the decision to invest in a given conferencing suite for employees to use and dictate that certain

meeting practices are to be followed. Conversely, *Participants* typically have little say in what technology is adopted and are compelled to use it, but can choose how they behave in an individual meeting.

We examine below how each of the main three principles can be put into practice by each of these three groups. The specific recommendations, illustrated in Figure 7, can help individuals to determine the part they can play in successful distributed meetings.



The specific recommendations for each of the three high-level principles – *Technology*, *Management* and *Team behaviour* – and what *Organisations*, *Chairpeople* and *Participants* can do about them are explained in more detail in the following sections.

Figure 7:

The recommendations for improving the effectiveness of distributed meetings fall into three main areas. Each of these can be influenced by different levels in an organisation.

6.1 Technology: Use high quality technologies

The study found that the technology used in a distributed meeting is critical to its success. In particular, survey respondents rated high quality sound and the reliability of the technology as the two highest factors that impact on meeting effectiveness. It is also important for technology to be easy-to-use and set up. Specifically, conferencing technologies should:

- ***Provide good sound quality***

Perhaps the most important factor in the effectiveness of distributed meetings, sound should ideally be clear, consistent and free from noise. Quality audio solutions will provide high-definition voice and reduction of noise from remote and on-the-move participants.

- ***Ensure reliable cross-platform connection***

It is vital to use technology that copes well and recovers gracefully from any connection problems, and allows people to easily join from disparate technological platforms (including consistency in the feature set on different platforms).

- ***Enable ease of use***

It should be easy to set up a meeting and to operate the technology within the meeting. Employees often will not use technology if it entails dealing with a large number of set-up steps to join the meeting, constant need for system updates (communicated in a cumbersome technical language) and integration issues.

- ***Facilitate identification of callers and speakers***

A large proportion of study participants (61%) felt that efficient speaker identification was a crucial aspect of an effectively run meeting. A high quality audio solution will facilitate better recognition of specific voices and tones.

The different parts of the organisation have different parts to play in relation to technology:

1 Organisations: Provide high quality technologies

The organisation as a whole often chooses the technology that will be used in distributed meetings. It has a responsibility to select technologies with the characteristics described above: with good sound quality, high reliability, ease of use, and help towards speaker identification.

2 Chairpeople: Choose appropriate technology for the meeting

While organisations choose the technologies that are available within a company, individual Chairpeople often still have a choice as to the particular technologies used in an individual meeting. To maximise meeting productivity, they should:



- ***Select high quality technology***

Chairpeople should select a technology with the characteristics described above. In particular, it should provide both good quality sound and reliability.

- ***Choose accessible technology***

As mentioned above, distributed meeting technology needs to be easy-to-use. In addition, Chairpeople should ensure that it is easily available to all the meeting participants, including those in other countries and those working from home or on-the-move. Meetings using high-end conferencing suites are not going to be effective if some of the participants have to join the meeting on their mobile phones.

- ***Identify the appropriate technology for the meeting***

Some tasks are more suited to face-to-face interaction, while others work well with video or with audio-only technologies. The Chairperson should select the most appropriate way of interaction for the particular tasks that need to be accomplished in the meeting.

3 Participants: Use technology appropriately

Participants often have little choice in the technology used in a distributed meeting. However, they still have a part to play, ensuring that they use the technology and its features appropriately. A particular example that arose many times in the study was:

- ***Mute microphones appropriately***

If participants are in a noisy place, they should mute their microphone in order not to disrupt the meeting. But it is important that they turn microphones back on when they do want to contribute, and that they do not use this feature in order to disengage from the meeting.



6.2 Management: Employ effective management strategies

Management also has a large impact on the effectiveness of a distributed meeting. This encompasses both the management of a project as a whole and the management of individual meetings. Good management can help teams to work well together, cover the important points and make efficient decisions. Different parts of an organisation all have a part to play in achieving this:

1 Organisations: Provide guidance and training

Organisations can influence how projects and meetings are managed, in particular through the provision of guidance and training. The recommendations in this report can provide a good start for this. Recommendations and best practice guidance should be presented accessibly and widely shared within an organisation. Training sessions can further equip project managers, Chairpeople and employees to manage and run distributed meetings effectively, also helping them to become familiar with new, useful technologies.

2 Chairpeople: Prepare for and manage the meeting

How a chairperson runs an individual distributed meeting can change that meeting entirely. Chairpeople can take several steps towards making a meeting more effective and productive:

- ***Set clear objectives and an agenda***

Having clear objectives focuses a meeting and helps it to be more productive. In addition, participants in any meeting contribute best if they know what is expected of them. The objectives, agenda, speaker plan and any other documents should, ideally, be circulated in advance, so that participants can prepare and know how best to contribute.

- ***Introduce the topics and goals and check for their proper understanding***

For clarity and overall understanding of those in the meeting, the Chairperson should outline the meeting structure at the outset of a meeting and summarise key points throughout.

- ***Maintain the momentum of the meeting***

Chairpeople should ensure that topics are discussed, the agenda is covered and important decisions are made. They need to move the discussion on and prevent it from getting stuck on certain points in order to ensure that the meeting goals are achieved within the time available. A good plan for the meeting, coupled with quality sound, document sharing and time keeping features, can help in achieving this.

3 Participants: Consider the needs of others

Individual participants can help towards the good management of a meeting, supporting the Chairperson rather than working at odds with him or her. In particular, participants can help by following these recommendations:



- ***Do not speak over other participants***

It is very disruptive when participants speak over each other, particularly in distributed meetings. Higher quality sound can help towards more natural interactions, but it is still important for participants to be considerate when they want to break into a discussion. In general, it is better for participants to wait for a natural break in the conversation, or to signal to the Chairperson that they would like to speak. Technologies, such as instant messaging, can help attendees do the latter.

- ***Identify yourself when speaking, unless using a technology that does this for you***

The study found that many people experience difficulties identifying who is speaking. This can cause problems with assessing the usefulness of a contribution and can make it more difficult for the Chairperson to manage the meeting. In many cases, it is helpful for participants to identify themselves when they speak. However, it may disrupt the flow of the meeting in some situations (e.g. larger meetings with continuously contributing participants). It is best if speaker identification can be facilitated through the technology used, for example through graphical interfaces or spatial audio.

6.3 Team behaviour: Encourage good team behaviour

A distributed meeting is also heavily affected by how the team works together and how its members behave. Different parts of an organisation can all contribute towards good team behaviour:

1 Organisations: Build good teams

Team-building starts at the organisation and project manager levels. Organisations can encourage team-building and provide space and time for it in schedules, while project managers can take care over the selection of people on a team and over team-building. In particular, they should:

- *Choose team members carefully and provide training*

Team members in distributed teams need to be ready for distributed working and be able to cope with the challenges and opportunities it brings. Chairpeople may need to take care when choosing people to work on distributed teams. It is also important to ensure that team members are trained appropriately in distributed working and in using the technologies involved, including latest interventions. Selection of an easily accessible and usable system will likely expedite the learning process of participants and make it less daunting.

- *Invest in team-building*

In order to build a strong team, it is important that team members are properly introduced to each other, and have the time and space to meet each other more informally. If possible, distributed teams should meet face-to-face at least once. If this is not possible, project managers should still ensure that teams are properly introduced and have time to get to know each other. Technologies that allow for a more immersive feeling and a more natural flow of the conversation can help with this, as well as being instrumental in driving good team behaviour over time.

2 Chairpeople: Encourage good team behaviour

Chairpeople can encourage good team behaviour within individual meetings:

- *Include time for introductions*

Participants work better when they have a level of trust and team cohesion, which can be fostered by taking the time to properly introduce attendees and providing time for social interaction in a meeting.

- *Manage turn-taking*

It is important to stop individuals from dominating discussions; making sure everyone gets a chance to contribute on each point should they wish to. This can be helped through the use of appropriate technology. For example, technology can help participants signal when they have something to say.



- *Encourage contributions from all participants*

There is a reason why different people are in the meeting and, therefore, each of them should be encouraged and allowed to voice their opinion; this may require, where appropriate, prompting quieter individuals. Additionally, there are technologies available that do not 'clip' participants' words when trying to 'break into' a conversation. This can help to overcome the issue with dominating speakers in a more natural way.

- *Encourage people to be attentive*

De-focused participants generally contribute very little to the items being discussed in a meeting. A tightly-focused agenda, coupled with quality sound and continual checking of understanding, can help to keep people focused and contributing.

3 Participants: Contribute to the meeting

Finally, good team behaviour comes down to the performance of the individual participants. It is important that they are considerate of the needs of others (as mentioned above) and also focus on and contribute to the meeting. In particular, they should:

- *Concentrate on the meeting*

Although multi-tasking is occasionally appropriate, in general it de-focuses participants and reduces meeting effectiveness, with people missing important information or not making useful contributions. Participants should try to resist the lure of their e-mail and web browser and concentrate on the meeting. Both reliable technology with high quality sound and good management can help to keep people focused on the task in hand.



CHAPTER 7

Conclusions

As communications technology continues to evolve, business meetings in internationally dispersed teams are expected to run effectively at any time and anywhere, saving both time and money. This project investigated the *Technology*- and *People*-orientated factors that impact on the effectiveness of such distributed meetings in the UK business population.

After a review of the existing research in this area and conversations with interdisciplinary experts, experienced representatives of multi-sector UK organisations were interviewed about their use of and opinions about the perceived efficiency of their conferencing meetings. A survey addressing similar issues was also conducted with 100 participants in the UK. The results show that audio-based solutions were the most frequently used conferencing technology, with 78% of survey respondents using them regularly. It is, therefore, not surprising that when asked the question – what are the factors that impact on the effectiveness of a distributed meeting? – almost 80% of respondents chose ‘having good sound quality’, which was second only to ‘using reliable conferencing technology’.

The patterns of use of conferencing technology varied across distributed teams, with the majority of professionals using it for between 30 minutes and one hour in teams of up to ten individuals on average. The preferences stated for key improvements also varied, but reliability of conferencing technology, good sound quality, focused participants and an effective Chairperson were voiced as the most prevalent among the study participants.

The study also found various challenges to successful conferencing. These include: (1) difficulties in speaker identification; (2) problems with people being distracted or multi-tasking; (3) difficulties in making oneself heard; and (4) the challenge of creating a good social experience. Furthermore, when asked about the barriers to adopting new technologies, many of the survey participants

expressed concerns about issues such as cost (53%), the effort required in integrating a new system (18%) and security (8%).

Taking all of these issues into consideration, this study identified two main areas that impact meeting effectiveness: *Technology* and *People*. These can be further divided into three main factors: *Technology*, *Management* and *Team behaviour*. The *Technology* used in a distributed meeting was reported to have a significant impact on its effectiveness. Poor technology can make meetings ineffective and waste both the valuable time of the participants and company resources. The *Management* of a project and an individual meeting was, moreover, said to have a large impact on meeting productivity. Effective management can help teams to work well together, cover the important points and make good decisions. The *behaviour of the team* can also improve, or detract, from a distributed meeting. This has implications for team work and individual behaviour, both within a particular meeting and across a project more generally.

The three factors – *Technology*, *Management* and *Team behaviour* – can be influenced by people at all levels of an organisation. In particular, this study has identified three groups that have a part to play in ensuring that distributed meetings are run productively: the *Organisation* as a whole, the *Chairpeople* and the *Participants*. *Organisations* can provide high quality technologies, produce and widely disseminate guidance and training on how the meetings should be run, and can help to build well-gelled teams. *Chairpeople* can choose appropriate technology for their particular meetings, prepare for and manage those meetings well, and encourage good team behaviour. Lastly, the *Participants* in a distributed meeting can improve the meeting by making appropriate use of the technology, considering the needs of others and remaining attentive throughout.

Ultimately, a combination of *Technology* and *People* factors – **using high quality communication technology, employing effective management approaches and encouraging good team behaviour** – can achieve greater productivity in distributed meetings for *Organisations*, *Chairpeople* and *Participants*.

Resources

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Conversations, Conferencing and Collaboration:

**A UK investigation of factors influencing the
effectiveness of distributed meetings**

Anna Mieczakowski, Joy Goodman-Deane,
Jeff Patmore and John Clarkson

Modern communication technology makes it possible to easily and cost-effectively run meetings across internationally dispersed teams all the time, anywhere. These distributed meetings can reduce travel costs and time. However, it is matter of some debate whether and in what circumstances such meetings can be as effective as meetings held face-to-face.

The Engineering Design Centre (EDC) at the University of Cambridge, in partnership with BT and Dolby, produced a report investigating this important question among UK-based organisations. Notably, this work was aimed at identifying the key factors impacting on the effectiveness of conferencing meetings and distilling good practice recommendations.

More information about this research project can be found at:
<http://www-edc.eng.cam.ac.uk/teleconferencing>

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