



**Virtual teams and virtual meetings:
Investigating the conventional wisdom
that face-to-face communication is better**

Stefan Gudjohnsen

Thesis of 12 ECTS credits
Master of Project Management (MPM)

May 2014



**Virtual teams and virtual meetings:
Investigating the conventional wisdom
that face-to-face communication is better**

Stefan Gudjohnsen

Thesis of 12 ECTS credits submitted to the School of Science and Engineering
at Reykjavik University in partial fulfilment
of the requirements for the degree of
Master of Project Management

May 2014

Supervisor:

Bob Dignen,
Director, York Associates, United Kingdom

VIRTUAL TEAMS AND VIRTUAL MEETINGS: INVESTIGATING THE CONVENTIONAL WISDOM THAT FACE-TO-FACE COMMUNICATION IS BETTER

Stefan Gudjohnsen¹

University of Reykjavik²

Paper presented as part of requirements for the degree of Master of Project Management (MPM) at the School of Science and Engineering, University of Reykjavik - May 2014

ABSTRACT

The purpose of this paper is to investigate the nature and impact of virtual working and communication in distributed teams, such as those which collaborate to execute projects from remote locations. Conventional wisdom is that virtuality constitutes a liability both in terms of a perceived negative impact on the less tangible affective issue of working relations and the more tangible metrics of project deliverables. In this paper the author seeks to understand both at a general level to what extent virtuality presents risks and opportunities for those in distributed teams, and also the more specific aspect of virtuality in meeting communications, and investigates how far virtual meetings can be an effective substitute for face-to-face meetings, including a brief overview of the potential impact of emerging technologies on virtual meetings. It concludes, against most common perceptions on the impact of virtuality, that virtual teams and virtual meeting communication can be just as effective as those with a non-virtual and co-located character, and in specific contexts it can even be desirable and outperform more classical modes of interaction. On the specific question of virtual meetings, it is suggested that teams can gain real benefits from the careful usage of virtual meeting interactions, particularly those supported by higher quality video conferencing suites, where training is provided or when sufficient natural exposure or experience of the medium simply enables team members to acquire sufficient skills to take advantage of the specific features of virtual conferencing over face-to-face interaction.

Keywords: face-to-face, teams, meetings, virtual, video, conferencing, communication.

¹ Stefan Gudjohnsen

² University of Reykjavik, School of Science and Engineering, Reykjavik – Iceland, s12@ru.is

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	LITERATURE REVIEW	2
2.1	Virtual teams	2
2.1.1	Virtual team defined	2
2.1.2	Reasons for the increased usage of virtual teams	3
2.1.3	Virtual team performance – the classical „underperforming“ thesis	4
2.1.4	Critical success factors for virtual teams	5
2.2	Virtual meetings	8
2.2.1	Virtual meeting defined	8
2.2.2	Media richness theory	9
2.2.3	Video conferencing – a historical perspective	10
2.2.4	Evolution of video conferencing - from problematic to immersive	10
2.2.5	Video conferencing now a viable alternative to face-to-face meetings	12
2.2.6	Improved communication dynamics in video conferences	12
2.2.7	Remaining reservations about video conferencing	14
2.2.8	The potential impact of new virtual technologies	15
3.	CONCLUSIONS	17
4.	ACKNOWLEDGEMENTS	19
5.	REFERENCES	20

1. INTRODUCTION

Traditionally project teamwork was primarily co-located, whether in terms of members collaborating in shared physical offices or at the same project sites. However, project organization and execution has evolved rapidly and emerging work practices are based more on interactions between individuals located in different physical locations, across international time zones, with severely limited opportunities for physical meetings and interactions.

The purpose of this paper is to do a literature review on the phenomenon of virtual working in remotely distributed project teams. In general virtuality, is perceived as a liability both in terms of a perceived negative impact on the less tangible affective issue of working relations and the more tangible metrics of team deliverables. In this paper the author seeks to understand at a general level to what extent virtuality presents risks and opportunities for those in teams, and also the more specific aspect of virtuality in team meeting communications, and investigates how far virtual meetings can be an effective substitute for face-to-face meetings, including a brief overview of the potential impact of emerging technologies on virtual meetings. The primary research questions are:

- 1) Can virtual teams be as effective as „physical“ ones, and
- 2) Can teams benefit from the use of virtual meetings?

The idea for this paper arose from the author's current professional responsibilities which involves frequent interaction with and use of video conferencing systems and collaboration solutions, to the extent that they represent a working norm. The author, as the only employee based in Iceland for his international company, connects with his colleagues primarily through the medium of the virtual meeting. It is the author's hope that his investigation of the virtual meeting as either opportunity or liability for distributed virtual teams, will help project managers to manage their virtual teams and associated project work more effectively.

The paper begins with a chapter defining the notion of virtual team, the drivers for its use in many companies today, along with a discussion on aspects of performance, social cohesion, management and trust in virtual teams. Following this general analysis of the phenomenon of virtuality, the remainder of the paper investigates the specific phenomenon of virtual meetings within the classic analytical framework of rich media theory, tracking the evolution of video conferencing usage in virtual teams and contrasting its usage compared with traditional face-to-face meetings. Lastly there is a discussion on how virtual meeting technology is evolving and its implications for the future of virtual project teams. The conclusion summarizes the theoretical findings of this paper and answers to the research questions raised above.

2. LITERATURE REVIEW

In the following two subchapters the author has taken the approach to discuss initially the overarching concept of virtual teams and then, more specifically, the dimension of virtual team meetings.

2.1 Virtual teams

This part of the paper focuses on virtual teams, such as those which collaborate to execute projects from remote locations. Historically, the vast majority of project teams were considered to be co-located but project execution is often conducted through what has become known as the virtual team. For those involved in international projects it is important to understand the drivers for virtuality in their own organizations and the implications which it brings to the management of team performance.

2.1.1 Virtual team defined

A number of definitions of virtual teams can be found in the literature. Townsend, DeMarie, and Hendrickson (1998) defined virtual teams as: „...groups of geographically and/or

organizationally dispersed co-workers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task“, stressing the fact that these teams rarely, if ever, meet in a face-to-face setting. Horwitz, Bravington, and Silvis (2006) also defined virtual teams as groups of geographically distributed people but added the variable of interdependent tasks and sharing responsibility for team outcomes. It is suggested that virtual teams can be defined as groups of people engaged on a common organizational task through the use of electronic information and communication technologies (Guo, D’Ambra, Turner, & Zhang, 2009). Although initially definitively distinguished from co-located teams by the notion of geographical dispersal, it should be noted that some degree of virtuality is found in most if not all teams, even simply in terms of team members located on different floors of the same building. It is also implied that the use of electronic media for interaction is common in most teams classically defined as co-located. According to a Cisco (2012) study on 862 business leaders more than 60 percent of communication today does not occur in real time, in other words, the majority of communications is virtual in character in most teams. Therefore, virtuality can be viewed to be a matter of degree as opposed to an absolute distinguishing criterion.

2.1.2 Reasons for the increased usage of virtual teams

With internationalization and globalization, organizations have become unrestrained by geography, time and other classical boundaries. Predominantly virtual teams are getting more common in today’s global economy as team members are increasingly dispersed and drawn to work on processes not confined to one immediate geographic local. Often there are sound business reasons for rationalizing virtual work, including reduced workspace costs, increased productivity, better ways of serving customers in multiple time zones, and increased capability to work on projects 24/7 (Horwitz et al., 2006). The capability to draw on expertise in different parts of the world is also noted as an important reason for establishing a virtual team (Siebdrat, Hoegl, & Ernst, 2009). Typical organizational initiatives that „...work over walls and across borders“ via virtual teams, include product development, quality improvement, marketing and change management, to name a few (Lipnack & Stamps, 2000).

One reason for growing use of virtual teams, associated with reduction of workspace costs, is the emergence of telework. Telework, also known as telecommuting, describes when an employee does office work from outside the office, typically from home. In a 2011 poll, conducted for Reuters on 11.383 online connected employees from 24 countries, 17 percent of employees who could connect online to their workplace reported to telecommute on a frequent basis, of which 7 percent worked every day from home and 10 percent on a consistent basis. Furthermore, 34 percent said they would very likely take the option of telecommuting on a full time basis if offered by their employer (Ipsos, 2012). This development implies that virtual teams are a growing trend and an attractive option for employees. Flexible virtual team-based structures are becoming more common as many organizations recognize that they can provide for more fulfilling work environments by allowing their employees to work regardless of location, making them more productive and creative. Employee expectations on how they will participate in the workplace are also changing with many expecting organizational flexibility. The new generation of workers are more technologically sophisticated and will expect the same from their employers (Townsend et al., 1998).

2.1.3 Virtual team performance – the classical „underperforming“ thesis

It is a commonly held belief that face-to-face interaction outperforms other forms of interaction when it comes to team performance and business success (Foroughi, Perkins, & Jessup, 2005). Indeed, it is generally held that the more a team is dispersed the more problematic it becomes for the team to perform effectively. However, the nature of virtual is complex with many contextual variables affecting productivity. For example, it has been found that teams with members in the same building on different floors, a kind of proximate virtuality, performed worse than teams with greater degrees of dispersal, including those with members spread across city, country or even continent. „The bottom line is that the quality of task-related processes appears to be a significant factor in deciding whether dispersion becomes a liability or an opportunity“ (Siebdrat et al., 2009). Moreover, when successful, virtual teams have been shown to dramatically improve business performance (Lipnack & Stamps, 2000).

2.1.4 Critical success factors for virtual teams

The literature on virtual teams indicates a number of critical success factors which should be considered by those leading and working in a virtual project team context.

Importance of social and personal skills

When it comes to recruitment of expert team members, it is important that virtual teams are not organized at the cost of social skills. A common mistake is to organize virtual teams with subject matter experts, overlooking the need for individuals to have the social skills essential for effective teamwork. With virtual teams, it is difficult for individual leaders to ensure that the team is functioning effectively. Therefore, self-leadership has to be promoted across the team with individual team members showing greater autonomy and personal responsibility. Early and periodic face-to-face meetings can be effective for initiating and maintaining key social processes that will encourage the required levels of social and emotional engagement and informal communication necessary for transmission of essential data and collaboration. As with co-located teams, the informal gathering at the coffee machine can be conducive for team spirit and planning for the occasional virtual coffee cup can help with social cohesion. It is also important that the virtual team can take full advantage of its diverse expertise and heterogeneity. Cultivating a global mind-set where people see themselves as part of an international network, helps provide an environment that is conducive to virtual teams (Siebdrat et al., 2009).

Planning communication in virtual teams

In terms of communications, those managing virtual teams need to plan carefully and thoughtfully. There are a number of variables which can impede communications: cultural diversity, language barriers, technology limitations and different time zones. According to Dignen the use of English as a lingua franca is challenging for many non-native speakers, making it inherently more difficult for them to interact and participate effectively in virtual spaces (B. Dignen, Director York Associates, personal communication, April 23, 2014). In a

survey commissioned by Cisco on young executives and video use, global businesses are believed to experience increased communication challenges due to language barriers. Interestingly, 93 percent felt that video communications could help (Cisco, 2013). Time zone issues represent another barrier to be managed. While some team members may be waking up fresh and starting their day others may already be low on energy and ready to go home, affecting group dynamics and efficiency. On top of that, when team members rely primarily on virtual media the absence of traditional communication cues such as facial expressions, gesture, and vocal inflection make subtleties more difficult to convey (Townsend et al., 1998). Cascio (2000) argued that since facial expressions and body language cues are not available in the virtual work environment it is important for virtual team members to compensate with other forms of communication in order to understand each other fully. For example by planning for frequent conversations and asking more questions. It is important that the project manager is aware of these limitations and factors it into his project planning.

Media synchronicity theory indicates that virtual team interaction can be seen as synchronous and asynchronous in nature. Synchronous interaction is team members collaborating in real time, such as with video conferencing or with chat sessions. Asynchronous interaction is at different times, as with email or letter-based communication. It is suggested that greater synchronicity in the medium allows for a better flow in the conversation, and potentially more effective communication (Hambley, O'Neill, & Kline, 2007). However Schmidt, Montoya-Weiss, and Massey (2001) showed that in some cases effectiveness for decision making at project review points would be enhanced when teams are dispersed and communicating asynchronously. It is therefore important for project manager to be flexible in their choice of communication media, balancing them, and not relying solely on a single or dominant medium, or use of that medium. Although collaboration competencies, such as influence, inspirational leadership, coaching, mentoring and emotional self-awareness, are important for project managers in general, according to a Hay Group survey of global Best Companies for Leadership they are vital for those leading virtual teams, due to communication limitations imposed by remote and electronic media based working (Lash, 2012).

Even decision-making processes may require adaptation to virtual context with a higher necessity for members of virtual teams to be empowered to make decisions according to Horwitz et al. (2006). Without empowerment, the technology that enables their collaboration may come to constitute an obstacle, reducing any competitive advantage that can be derived from the virtual team. The following factors were identified as important for effective virtual team operations: quality communications technology, clearly defined roles and responsibilities, cross-cultural understanding, organizational commitment, solid team member relationships and trust.

Balancing trust and supervisory control

Balancing the granting of trust against the need to control is one of the central dilemmas of virtual team leadership. While often seen as important for collaboration within teams generally, for virtual teams „trust is a need-to-have quality“ (Lipnack & Stamps, 2000) and believed to be a prerequisite (Druskat & Wolf, 2001). Research confirms that trust has a positive impact on the effectiveness of virtual teams (Hakonen & Lipponen, 2009) making the cultivation of trust an important aspect of virtual team management. Paradoxically, working virtually magnifies the challenges to build trust – individuals are less known, visible and less predictable to each other. Consequently, those involved in virtual teams need to more consciously foster trust by actively demonstrating consistency and responsiveness to others, both important trust generators (Horwitz et al., 2006). According to Handy (1995) trust needs touch and the more virtual the organization becomes, the more its people need to meet in person. Horwitz et al. (2006) agree with him, stating: „Trust requires regular face-to-face interaction, the very activity the virtual form eliminates“. In the absence of face-to-face interaction in the flesh, the project manager must find alternative ways in the virtual environment to connect and build proximity.

The rise of virtuality may generate, ultimately, the need to adapt our understanding of and approach to trust. Handy (1995), in his discussion on trust and the virtual organization, stated that we have to get used to working with, and managing those, we do not see. Historically, organizations were predicated partly on assumptions that people could

not be trusted unless they were physically viewable working, also evident in the practice of monitoring time spent in the office. Virtual teams may need to be based more on the values of performance and outcomes more than tracking of time on the job, akin to flexible working concepts prevalent in many organizations today. Contextual factors such as levels of motivation and expertise may also be a factor in deciding the form of trust available to leaders managing specific team members virtually. For example, those less competent and motivated may require more rigorous and less trusting-based leadership approaches (B. Dignen, Director York Associates, personal communication, April 23, 2014).

2.2 Virtual meetings

The second part of the paper focuses on a specific dimension of virtual team interaction, namely virtual meetings, and investigates how far the commonly held assumption that the virtual meetings act as a lower form of communication channel, even a disabler for virtual teams, really holds. It examines the use of video conferencing and investigates its advantages as a communication channel over face-to-face meetings.

2.2.1 Virtual meeting defined

Meeting is the coming together of two or more people to discuss a topic or task, with the objective of achieving a common goal through verbal interaction. Meetings are essential in project management and most projects have meetings at regular interval to keep the project team informed about the status of the project. Classically, these meetings should be prepared in advance, conducted accordingly and any resulting actions acted on (IPMA, 2006). Virtual meetings are governed by the same principles as conventional meetings. They are „...mediated by rules of good conduct: turn taking behavior, addressing behavior, politeness rules and dominance relations“ (Reidsma et al., 2007). However, unlike conventional meetings, virtual meetings take place using communications technology such as audio conferencing, web conferencing or video conferencing. Specificities in practice due to the virtual nature of interaction seem to be present at various levels. For example, virtual

meetings are often more structured due to resource and time constraints encouraging team members to have an agenda beforehand so they can better anticipate and plan for the meeting (Paul & Ruchinskas, 1995).

2.2.2 Media richness theory

Media richness theory (MRT) differentiates channels of communication by impact according to degrees of virtuality. Email, for example, is seen as less rich and less suited to complex communication than less virtual forms such as face-to-face interaction. MRT implies that when rich media is used, project managers will be more effective and efficient in communicating with and managing their teams (Kahai & Cooper, 2003). Foroughi et al. (2005) discuss media richness theory in a negotiation setting and how face-to-face communication can be viewed as the richest communication method, followed by video conferencing, then audio conferencing, electronic mail, voicemail and the leanest one being computer conferencing [chat]. Audio conferencing communication, highly used in the project world of today, is relatively rich through pitch, volume, quality of voice, speed of talking, use of pauses, filler words and laughter. Face-to-face enables richest communication through the phenomenon of close physical proximity which enables visual communication through body movement, gestures, facial expressions and eye contact.

MRT was developed over a decade ago and is historically based upon the contrast between older audio conference technologies in contrast to physical meetings. In this context, little attention was paid to video-based meeting environments, which were relatively poor, for example having a visual image showing only head and shoulders with limited video and audio quality. Consequently, relatively prejudicial attitudes towards virtual communication became the norm. However, today's immersive video conferencing systems which show the body from slightly below the chest area with shoulders and arms fully visible, clear facial expressions and eye contact, with body movement and gestures easily observed, mean that virtual communication presents itself as a viable alternative if not preferred option in some cases over face-to-face meetings.

2.2.3 Video conferencing – a historical perspective

Video conferencing is far from being a new technology. In fact it was in 1964 that AT&T unveiled the Picturephone, a system that transmitted a user's image and voice simultaneously over telephone lines. It was a radical change to communicating in that day and age and promised to mimic physical presence by the Picturephone's ability to convey „...feelings of proximity and intimacy with the other party“. The equipment consisted of a 5-inch screen, camera, loudspeaker and cathode-ray tube integrated into a desktop display unit. It displayed a black and white image at 250 active lines at thirty frames per second. Marketing studies revealed that users experienced an enhanced feeling of proximity and intimacy with the other party. But negative reactions to the black and white image suggested that improvements would need to be made to simulate more closely to the naturalness of face-to-face conversation including hand, eye and body movement. Eventually, due to a lack of sales, the Picturephone project failed, as with the fax project of the 70s, because there were simply too few people using the device to make regular communication viable (Lipartito, 2003).

2.2.4 Evolution of video conferencing - from problematic to immersive

According to Anderson and Shane (2002) the early days of the use of video conferencing in virtual teams was plagued with performance issues, leading to claims that video conferencing could actually sabotage communication between team members and undermine trust. Video conferencing gained the reputation as a medium where it was common to misunderstand, mishear and misinterpret messages. There were also technically-driven delays inherent during dialog, with one participant speaking often waiting for responses that did not come and then interrupting the others or talking simultaneously. A negative perception of video conferencing in its infancy was not uncommon and even today users' experience of widely available and free video conferencing software, for example from a business hotel WiFi or from home office, can be frustrating and foster an ongoing prejudice towards virtual meetings using video conferencing technology.

Modern day high-end video-conferencing technology has eliminated most of the above issues as technology and access to high bandwidth has improved. Today's high-end immersive video conferencing solutions operate with high definition image quality, typically in these systems with a life-size image persons participating. The audio portion of these meetings is also wideband and spatial so the sound will appear as coming from the specific location of each person speaking. The systems have been designed in a way such that image and audio is synchronized, with natural delays in communication kept under a certain minimum to support a normal conversation. Some systems even factor in an office environment, for example, showing a narrow segment of the meeting table, to give the perception that the meeting participants are all sitting at the same table. Some take it even further and paint the geographically dispersed meeting rooms in a similar color so the perception of sitting in the same meeting room is enhanced. Bushaus (2008) quoted Howard Lichtman, president of Human Productivity Lab, describing Telepresence, one of today's high-end video conferencing equipment, as different from traditional video conferencing and even high definition video conferencing, because it gives users the illusion they are meeting together in the same room. „The experience is immersive, not observant“ and technology is hidden so that the room appears to be a typical conference room.

Traditional video conferencing systems in dedicated meeting rooms typically were cumbersome and inconvenient to use, requiring someone from IT to set up and facilitate even the simplest of meetings. This resulted in negative experiences and avoidance in usage of these meetings. However, removal of technical complexity significantly alter the user experience. In the mid-1980s, Xerox connected two sets of scientist between Palo Alto in California and Portland in Oregon with each other via communications system that were always on. No setup was required by the scientists, they only had to walk up to the camera and start talking to the team on the other end. The scientists reported that the richness of the communications system significantly assisted them in their work, because of the high-quality communications and concluded that their geographical separation no longer inhibited effective collaboration (Townsend et al., 1998). Today, technology continues to increase with new and interconnected functionalities in scheduling such that individuals can organize a meeting in a calendar application on a phone or office computer and „...meeting

participants will walk into a room and when the meeting is scheduled to start it will pop up on the screen and get going“. These experiences indicate that technological ease combined with high quality are essential for people to adopt video conferencing (Rossi, 2013). When Cisco replaced their existing relatively lower quality video conferencing platform with Telepresence solutions within their organization (a high end immersive video conferencing solution) the utilization jumped from 5 percent average utilization up to 65 percent (Bushaus, 2008). The inherent complexity of technology can undermine the advantages of richer media. However, if complexity is removed, rich media theory seems to hold true with participants experiencing video conference as preferable over other virtual media and as mostly approximate to face-to-face communication.

2.2.5 Video conferencing now a viable alternative to face-to-face meetings

The underlying rationale for using virtual meetings has many similarities as that for virtual teams discussed earlier including, for example, the avoidance of travel costs associated with physical meetings. The recent increase in the use of video conferencing represent new approaches to risk mitigation in the light of newly-perceived threats. HP's development of their high latest definition video conferencing solution, Halo, designed with Dreamworks for use by Hollywood in film making, came in the wake of the September 11th 2001 attacks which created global travel restrictions. Growing concern over climate change and the contributory nature of airline travel towards carbon dioxide gas in the upper atmosphere is also a factor in decision on use of specific communication media, as it is calculated that a round-trip flight from Chicago to London releases 1.459 tons of carbon dioxide per passenger (Bushaus, 2008). The new rationale for virtual meetings is strong and Herrell (2010) predicts confidently that in the next decade companies will leverage high definition video meetings increasingly for business partner meetings and contract negotiations.

2.2.6 Improved communication dynamics in video conferences

Research into the nature of communication in video conferences as compared to face-to-face meetings has yielded surprising findings concerning the advantages of the virtual

environment. According to Paul and Ruchinskas (1995), respect for time constraint in a video conferencing meeting, is higher than with traditional face-to-face meetings. This is primarily due to availability of technology and facilities for these meetings. Thus increased awareness of scarcity of time, due to the need to use facilities efficiently, stimulates increased effectiveness in using the allocated time that would not necessarily be the case with regular face-to-face meetings. As meetings become more structured and task focused, the perception is that video conferencing meetings are more productive than face-to-face meetings. Handy (1995) agrees that video teleconference meetings can be more productive, but only if the team members „...know each other as people, not just as images on the screen“.

Rosetti and Surynt (1985) concluded that video conferencing is a viable alternative to face-to-face meetings. Drawing on media richness theory, they ran experiments with tasks requiring a high degree of interpersonal communication between team members, and looked at the ability of teams to correctly solve the problem, and to what degree they succeeded. In their research they compared problem solving in virtual and face-to-face settings and concluded that group scores in a virtual setting supported by video conferencing were consistently higher than using the face-to-face meeting.

Schmidt et al. (2001) looked at face-to-face communication in the context of new product development involving decisions that needed to be made in the development process at the appropriate gates. They concluded that, due to cognitive limitations, individuals have problems performing optimally in face-to-face situations and that face-to-face teams are subject to group dynamics or social influences that may contribute to decisional error. Siebdrat et al. (2009) concluded that when the objective of the virtual team focuses around task related processes and care is taken to plan and foster appropriate socio-emotional aspects, virtual teams will outperform co-located ones. Finally, it is predicted that if a structured approach is taken to virtual team dialog in video conferences, no significant difference can be found compared to face-to-face meetings. However, in the virtual context a specific dialog technique must be deployed aiming to support a shared understanding of meeting objectives (Guo et al., 2009).

2.2.7 Remaining reservations about video conferencing

Despite such encouraging results from research findings on comparison of face-to-face and video conferencing meeting, the video conferencing format has not gained high popularity. Cost may be a factor underpinning ongoing reservations as high quality immersive collaboration solutions are still seen as expensive (Bushaus, 2008), despite the fact that these solutions are increasingly built on open standards improving interoperability between vendors reducing high costs for system upgrades to a single vendor's proprietary solution (Herrell, 2010). Adoption of these solutions is not widespread today and according to Dignen the trends for virtual meetings are leaning far more towards audio conferencing, probably due to cost advantages over video conferencing with perceptions that extra technology is „...not being seen as sufficiently more productive to justify the extra investment“. He suggests that the human factor still plays a critical part in the adoption of virtual communications, as „...some people, whether for cultural or psychological or even competence reasons, may just not like working with video conferencing“ (B. Dignen, Director York Associates, personal communication, April 23, 2014). Indeed, the perception of face-to-face as an intrinsically better form of communication, as underlined by MRT, persists. Cisco commissioned a study to explore business value of in-person communication in distributed organizations with respect to their interaction with partners and customers. The research was conducted by the Economist Intelligence Unit in December 2011 and uncovered business leader perspectives from 862 business leaders across more than 19 industries regarding the value of in-person communication and its effect on more than 30 business processes. The main findings were that 75 percent of business leaders indicated in-person collaboration as critical to business success affecting business outcomes more than other forms of communication (Cisco, 2012). Dignen suggests that this may be a persistent „false belief“. He contends that the atmosphere in a virtual meeting can be more disciplined and more neutral, free of the emotions generated in face-to-face contacts, resulting in more effective decision making.

Psychological fears around change may also be a factor in slow acceptance of virtual communication media. Anderson and Shane (2002) pointed out that people in general will

tend to avoid using technology they are not familiar with and that care must be taken to make sure all team members are properly trained and educated on the meeting technology that is available to them. Without proper training it is likely that team members will have experience problems in the beginning which will deter them from future usage. Yet sustained usage with technology is critical to efficiency and outcomes. Van der Kleij, Paashuis, Langefeld, and Schraagen (2004) showed in their research that with repeated long term exposure to video conferencing the teams adapt to the usage of the video conferencing solution to the point where the ability for task based work is the same for both face-to-face and virtual meetings using video conferencing. Dignen agrees that as teams get more familiar with the virtual meeting environment, they can begin to use it for more complex tasks (B. Dignen, Director York Associates, personal communication, April 23, 2014).

2.2.8 The potential impact of new virtual technologies

Technology and communication solutions continues to evolve at an accelerated rate. The younger generation is generally more comfortable with using technologies such as Skype and Facetime in their personal environments and are going to expect similar technologies in their business environment. In fact, a recent survey commissioned by Cisco (2013) on young executives and video usage, showed that for 87 percent of these young execs the organization's ability to facilitate video meetings, would impact their decision when considering job offers. When aspiring to manage teams larger than 50 people, 70 percent of respondents reported they would rely more on video when managing these teams. Overall, 61 percent claimed they would rely more heavily on video with the main reasons today being visual cues associated with video meetings and the ability to „be there“ without traveling.

Decisions on communication solutions for organizations and technological advances will also force greater virtuality on employees. Herrell (2010) predicts that in the next decade workers will no longer be assigned a landline phone and In the future they will have a touch screen device with embedded camera and advanced interfaces for feature and

application access. Pervasive video is likely to extend across enterprises with video solutions expanding into large telepresence conference rooms and downwards to individual desktops enabling interactive and collaborative sessions from employee desktops. Virtual work teams will become increasingly the norm as organizations will no longer encourage or permit co-located work spaces. Companies are reducing costly office space in favor of a virtual structure which includes regular working onsite with customer or from home. This virtual flexible work environment is a major driver of the need for productivity tools around virtual meetings. It is expected in the next decade that more advanced features will be deployed to the desktop, with many services being delivered from the cloud as a service, thereby eliminating the barrier of complex installation but rather promoting ease of use.

New product features have the potential to more closely simulate face-to-face interaction but even enhance the user experience of video conferencing such that it may become a preferred option over face-to-face communications. Today, with video conferencing, face recognition technology and multiple cameras are being leveraged to show participants in video meetings such that the active speaker is always shown on the other end of the call in full view. Now, when someone stands up to draw on the whiteboard and explain something, the camera can follow and then switch back to the team around the table as appropriate. This replication of authentic gaze patterns adds to the notion of „real communication“.

Some systems allow users to take snapshots of shared content, such as PowerPoint slides, to mobile devices and also to review previously shared content without interrupting the presenter. According to Mistretta the trends in video conferencing are towards meetings being more content and context aware, so that information is delivered to meeting participants that would not necessarily be available to them when attending a physical meeting. An example of this would be that, when you look at people you are meeting over video conferencing, company directory information or social media would be leveraged to provide a popup on the screen showing the name and relevant information about the person. Relevant communication on other media, such as email and meeting notes could be automatically pulled up on your personal device to supplement the meeting

experience (A. Mistretta, Director of Cisco Collaboration Endpoint Technology Marketing, personal communication, May 6, 2014).

Robotic technology also promises new developments in terms of virtual meetings. Telepresence robots are available with a video conferencing unit attached to a mobile platform that individuals can move around an office space from a remote location. It enables remotely-located team members to move around an office and have impromptu meetings with co-workers, moving up to their desk to have a chat, meet the group in a meeting room or even at the coffee machine. But, as Townsend et al. (1998) point out, regardless of technology advancements and the possibilities that the future may bring for virtual team collaboration, it does not diminish the imperative to train and develop the teams so they can effectively participate and function in the virtual environment.

3. CONCLUSIONS

The purpose of this paper was to conduct a literature review seeking an understanding of virtual teams and virtual meetings and how far they can act as an effective substitute for their physical counterparts. After a careful review of the literature, the conclusions are summarized in the following paragraphs.

Addressing the first research question, can virtual teams be as effective as physical ones, the answer is contingent as it depends on the specific task, technology available and features of the team. However, the literature does support the conclusion that virtual teams can be as effective as physical ones. There are factors which can be predictors of specifically virtual team performance. For example, when assembling a virtual team, managers need to look not only at subject matter expertise, but also to recruit those with social skills that are conducive to effective teamwork. Additionally, communications in virtual teams need to be planned carefully and thoughtfully, balancing communication media available and taking into account potentially diverse cultural attitudes to use of technology, differences in language level of participants, inherent limitations of technical platforms and, finally, the

impact of different time zones in play. It seems particularly important in virtual team collaboration for team members to receive proper training on technology usage, as ease of use enables virtual interaction to simulate face-to-face interaction more quickly. Trust is likely to be an essential characteristic of effective teams but harder to establish in virtual ones, due to infrequent face-to-face interaction. Therefore, alternative ways are needed to facilitate communications and foster the development of trust in a virtual context. If all of the above are managed, it has actually been shown that virtual teams can outperform physical ones, as Siebdrat et al. (2009) concluded in their research.

The second research question, can teams benefit from the use of virtual meetings, can also be answered with an affirmative. The literature supports this conclusion, although in the past the technology with relatively poorer virtual meeting platforms would have mitigated against such a conclusion. Today there is clear indication that teams can benefit from the use of virtual meetings, particularly when using higher quality video conferencing solutions. Research shows that virtual meetings are often more structured and productive than their physical counterparts due to greater focus on efficient use of immersive collaboration resources within meetings. Additionally, although meeting face-to-face historically provided the „richest“ experience on the continuum of diverse forms of business communications, the quality of video conferencing has improved to the point that it can now simulate physical proximity very effectively. Moreover, technological enhancements to setting up and conducting a virtual meeting using video conferencing technology have overcome historically cumbersome and problematic procedures such that necessary levels of ease of use can be guaranteed. As with features of general aspects of virtual teams, it remains important to train team members properly in the use of virtual media, but research has shown that with long-term exposure to video conferencing, team members adapt to the point where the ability for task based work over that medium is the same as for face-to-face, allowing virtual meeting environments to be more productive in certain contexts than physical meetings, as validated by Rosetti and Surynt (1985).

On a personal note, gaining insight into a portion of the available literature on virtual teams and virtual meetings has been professionally very rewarding for the author. After reviewing the literature the author now perceives his virtual meetings in a different way. The author has increased appreciation for the focus and attentiveness that video communications can bring to the meeting, and has increased awareness of the importance of planning, proper introductions of meeting participants and the fostering of social cohesion. In terms of trends, the author feels that it is likely that the use of virtual teams and virtual meetings will continue to grow. The next generation of workforce is used to leveraging communications technologies such as Skype and Facetime in personal life and is likely to demand the same in a professional work environment. As most of the literature around video conferencing refers to an older generation of this technology, the author feels it would be beneficial to conduct further research into the performance of virtual teams and meetings with respect to modern day video conferencing technology, and its specific impact on project team performance.

4. ACKNOWLEDGEMENTS

The author wants to express his sincerest gratitude to his advisor, Bob Dignen, Director of York Associates, for all the support given during the research and materialization of this paper, and for leveraging virtual meeting technology in the process: from his office, home, and various hotel rooms around Europe; it was a shining example of effective virtual team collaboration. Also big thanks to Angie Mistretta, Director of Cisco Collaboration Endpoint Technology Marketing, for the interview on future trends. My wife, Hanna Lara Gylfadottir, deserves special thanks for her help in debating the literature and challenging me on the contents of the thesis, lastly thanks to my fellow students in MPM2014 for their entertaining status updates on Facebook, as they progressed through their own papers.

5. REFERENCES

- Anderson, F. F., & Shane, H. M. (2002). The impact of netcentricity on virtual teams: The new performance challenge. *Team Performance Management*, 8(1/2), 5–12.
- Bushaus, D. (2008, March 17). Telepresence: Ready for its close-up. *Connected planet*. Retrieved April 27, 2014, from http://connectedplanetonline.com/broadband/news/telecom_ready_closeup_2/index.html
- Cascio, W. F. (2000). Managing a virtual workplace. *The Academy of Management Executive*, 14(3), 81–90.
- Cisco. (2012). Power of in-person: The business value of in-person collaboration. Retrieved April 18, 2014, from <http://www.cisco.com/web/telepresence/economist.html>
- Cisco. (2013, August 5). Cisco global survey reveals that the majority of aspiring executives see a big future for video in the workplace. *The Network: Cisco's Technology News Site*. Retrieved April 19, 2014, from <http://newsroom.cisco.com/press-release-content?type=webcontent&articleId=1231231>
- Druskat, V. U., & Wolf, S. B. (2001). Building the emotional intelligence of groups. *Harvard Business Review*, 80(3), 81-91.
- Foroughi, A., Perkins, W. C., & Jessup, L. M. (2005). A comparison of audio-conferencing and computer conferencing in a dispersed negotiation setting: Efficiency matters! *Journal of Organizational and End User Computing*, 17(3), 1–26.
- Guo, Z., D'Ambra, J., Turner, T., & Zhang, H. (2009). Improving the effectiveness of virtual teams: A comparison of video-conferencing and face-to-face communication in China. *IEEE Transactions on Professional Communication*, 52(1), 1–10.
- Hakonen, M., & Lipponen, J. (2009). It takes two to tango: The close interplay between trust and identification in predicting virtual team effectiveness. *The journal of eWorking*, 3(1), 17-32.
- Handy, C. (1995). Trust and the virtual organization. *Harvard Business Review*, 73(3), 40-50.

- Hambley, L. A., O'Neill, T. A., Kline, T. J. B. (2007). Virtual team leadership: The effects of leadership style and communication medium on team interacting styles and outcomes. *Science Direct*, 103(1), 1–20.
- Herrell, E. (2010, March 9). Enterprise communications: The next decade – An information workplace report. Retrieved April 27, 2014, from <http://www.forrester.com/Enterprise+Communications+The+Next+Decade/fulltext/-/E-RES56496>
- Horwitz, F. M., Bravington, D., & Silvis, U. (2006). The promise of virtual teams: Identifying key factors in effectiveness and failure. *Journal of European Industrial Training*, 30(6), 472–494.
- International Project Management Association (IPMA). (2006). *ICB: IPMA competence baseline* (3rd ed). Nijkerk: IPMA.
- Ipsos. (2012, January 23). *The world of work: Global study of online employees shows one in five (17%) work from elsewhere*. Retrieved May 5, 2014, from <http://www.ipsos-na.com/news-polls/pressrelease.aspx?id=5486>
- Kahai, S. S., & Cooper, R. B. (2003). Exploring the core concepts of media richness theory: The impact of cue multiplicity and feedback immediacy on decision quality. *Journal of Management Information Systems*, 20(1), 263.
- Lash, R. (2012). The collaboration imperative. *Ivey Business Journal Online*. Retrieved from <http://search.proquest.com/docview/926976662?accountid=135943>
- Lipartito, K. (2003). Picturephone and the information age: The social meaning of failure. *Technology and Culture*, 44(1), 50–81.
- Lipnack, J., & Stamps, J. (2000). *Virtual teams: People working across boundaries with technology* (2nd ed.). New York: Wiley.
- Paul, H. S., & Ruchinskas, J. (1995). From face-to-face meeting to video conferencing: Potential shifts in the meeting genre. *Management Communication Quarterly*, 8(4), 395-423.

- Reidsma, D., Akker, R., Rienks, R., Poppe, R., Nijholt, A., Heylen, D., & Zwiers, J. (2007). Virtual meeting rooms: From observation to simulation. *AI & SOCIETY*, 22(2), 133–144.
- Rosetti, D. K., & Surynt, T. J. (1985). Video teleconferencing and performance. *Journal of Business Communication*, 22(4), 25–32.
- Rossi, B. (2013, March 12). Telepresence of mind for ROI. *Computer News Middle East*. Retrieved April 27, 2014, from <http://www.cnmeonline.com/features/telepresence-of-mind-for-roi/>
- Schmidt, J. B., Montoya-Weiss, M. M., & Massey, A. P. (2001). New product development decision-making effectiveness: Comparing individuals, face-to-face teams, and virtual teams. *Decision Sciences*, 32(4), 575–600.
- Siebrat, F., Hoegl, M., & Ernst, H. (2009). How to manage virtual teams. *MIT Sloan Management Review*, 50(4), 63–68.
- Townsend, A. M., DeMarie, S. M., & Hendrickson, A. R. (1998). Virtual teams: Technology and the workplace of the future. *The Academy of Management Executive*, 12(3), 17–29.
- Van der Kleij, R., Paashuis, R. M., Langefeld, A., & Schraagen, J. M. C. (2004). Effects of long-term use of video-communication technologies on the conversational process. *Cognition, Technology & Work*, 6(1), 57–59.