Lync-ing Telecommuters for Collaboration: Case Study of a Healthcare Organization

by

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Abstract

The study was undertaken to explore the premise that the benefits that telecommuting promises for organizations and workers today are largely dependent upon the communications technologies employed to support the communication and collaborative needs of distributed teams.

This instrumental case study of the large Canadian healthcare organization, Alberta Health Services, examined the roles of telecommuters, their needs for communication and collaboration, and how they utilize the unified communications technology, Microsoft® Lync® 2010, to perform work tasks from home. Data was collected through an online survey from 419 respondents, and in-depth interviews with 11 employees, who work from home 15 hours per week or more.

The findings from this case study largely align with the academic literature about telecommuting. Work-related motives take priority over personal concerns when choosing to work from home. Telecommuters benefit from less commuting to the worksite, and fewer disruptions, in addition to increased flexibility, productivity, efficiency, and quality of life. They are concerned about working more or too much, and isolation. Overall, the opinion of study participants is that Lync is an effective communications medium for sharing or obtaining feedback and information, collaborating, brainstorming ideas, making decisions, and interacting socially. Manager support, access to appropriate peripherals, and reliable internet service are critical to a successful telecommuting experience.

Key words: telecommuting, working from home, telework, distributed work, virtual work, unified communications, Microsoft Lync 2010, Alberta Health Services.

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Disclaimer

The views expressed in this capping project are those of the author and do not reflect the official policy or position of Alberta Health Services, the University of Alberta, the Faculty of Extension, or the Masters of Arts in Communications and Technology program.

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I. INTRODUCTION

A. Background

Alberta Health Services (AHS), Canada's first province-wide, fully integrated health system, was created in May, 2008. Nine geographically based health authorities, and three boards from the areas of mental health, addictions, and cancer were consolidated into a single provincial organization to provide a "more streamlined system for patients and health professionals across the province" (http://www.albertahealthservices.ca/191.asp). The announcement was big news to Albertans as the general citizenry had not been consulted or provided with warning about the reform.

The new organization brought together more than 85,000 health professionals and support staff, 7,200 physicians, and 13,000 volunteers from across the province to coordinate the delivery of health supports and services to 3.5 million users of the system. Employees that previously had no need to communicate outside of their geographical health authorities suddenly found themselves assigned to new provincial, geographically distributed workgroups and business units, often reporting to leaders they had never met. The momentous change also created new and unique communication and collaboration requirements that resulted in an increased need for travel and access to existing video- and web conferencing services and applications. Following the amalgamation, AHS was spending approximately $20 million on staff-related travel, in addition to about $800 thousand on web conferencing, and about $35 million on telephony services.

Because they enable communication and collaboration across distance and time, computer-mediated technologies have been eagerly adopted by organizations to support distributed work and better utilize and manage business and human resources. To strengthen the

capacity of employees to effectively communicate and collaborate across the province, and reduce costs, AHS looked to unified communications systems, a union of telecommunications and groupware systems that integrate real-time communication services like instant messaging, video conferencing and data sharing with non-real-time communication services like voicemail and email. Microsoft's Office Communication Server (OCS) system was chosen for a proof-of-concept pilot within the Information Technology (IT) department. OCS was quickly adopted, and word of mouth about its capabilities resulted in a needs "explosion" from other teams. An upgrade to Microsoft Lync 2010 in 2011 increased diffusion to nearly 16,000 employees by May 2014.

Six years after AHS' formation, the growing population in Alberta continues to pressure AHS to deliver timely and effective healthcare services. Between 2012 and 2013, the provincial population expanded by 3.51%, or 136,335 people; the highest growth rate across the country and more than triple the national average of 1.16% (https://osi.alberta.ca). One significant organizational challenge is the strategy to reduce space costs, even as the workforce grows. To alleviate space shortages, the organization implemented an informal pilot program in 2012 to enable employees to work from home. Most telecommuters were recommended by their managers, and volunteered to work from home one to three days each week. This space paradox was summed up by a study participant:

> Alberta Health Services…is trying to minimize the amount of leased space that they have, yet at the same time they have high demand for people. So it's two policies that are counterintuitive to each other. It's a bit of a challenge…when I first started…they didn't have a space for me…if they did it wouldn't have been appropriate space! How do you deal with that? It is my personal opinion that AHS is saving money by having me work from home. And it also allows me to work in a secured area when I can be on the phone and not disturbing other people.

B. Purpose of the Study

The purpose of this case study is to discover and describe how effectively telecommuters in Alberta Health Services are utilizing Microsoft® Lync® for communication and collaborative tasks. Research questions will ask:

1. Who in the Alberta Health Services organization is telecommuting at least 15 hours per week from home?
2. What are the opinions and attitudes of Alberta Health Services telecommuters towards Microsoft® Lync® 2010 for communicating and performing collaborative tasks from home?
3. How are Alberta Health Services telecommuters using Microsoft® Lync® to exchange information and ideas, collaborate, make decisions, and socialize?

C. Definitions

1. Telecommuting

Physicist and engineer, Jack Nilles, coined the term *telecommuting* in 1973 during his formal research of the phenomenon at the University of Southern California. He supposedly came up with the term while stuck in Los Angeles traffic (Kurland & Bailey, 1999). More recent researchers in the field have adopted the following definition of Nilles' term:

> Telecommuting is an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization (Gajendran & Harrison, 2007, p. 1525).

For the purposes of this study, telecommuters are defined as AHS employees who work from home at least 15 hours each week and use Microsoft Lync 2010 to interact with others inside and outside the organization.

2. Lync 2010

Supporting the communication, information, and collaboration needs of workers no matter where they are located, the enterprise unified communications system, Lync 2010, integrates real-time presence, instant messaging, collaborative conferencing and voice capabilities with programs like email and voice mail, through a single, easy-to-use interface that is consistent across a variety of computing devices. Potential benefits include increased productivity, reduced infrastructure costs, and simplified administration (Microsoft, 2011, p. 4). For this study report, all references to "Lync" will mean Lync 2010. Features of the individual components are further explained in the *IV Method* chapter.

D. Limitations

As interpretivist research, the attitudes, opinions and behaviours captured in this bounded instrumental case study are a sample of one setting and time, and are bound to differ somewhat from outcomes in different settings and time, both within and outside the Alberta Health Services organization. Comparability and generalizability for research impact were not the intent of this exploratory study.

Because a formal telecommuting program has not been implemented in the organization, there was no feasible way to determine the number of employees who met the study criteria; therefore it is not possible to determine response rates. The study relied upon participants self-selecting from all users of the Lync unified communications system.

E. Delimitations

Of the four issues related to telecommuting identified in the literature by Gajendran and Harrison (2007): workforce, organizational, technological, and environmental, this study focused on only two – workforce and technological. While concepts from organizational and

environmental aspects of telecommuting may be interpreted from the findings, they are not directly explored.

This study focused on one particular organization in Alberta. Rather than conducting a survey of every telecommuter in the organization, eligibility criteria centered on employees working from home at least 15 hours each week in an effort to capture a more homogenous group of telecommuters with more than a casual familiarity with the phenomenon, and use of Lync.

F. Significance of the Study

Applying a case study approach to a natural field setting offers a deeper understanding of telecommuting phenomena within unified communications-supported work environments. The research attempts to fill a gap identified in the literature for studies of actual telecommuting situations that further the understanding of the technological aspects of telecommuting.

The insights yielded by this research can be used by enterprises considering unified communications systems to improve their organizational communication and collaboration abilities. As well, administrators contemplating the issues involved in implementing a telecommuting program within their organization may find instructive and informative the experiences shared by telecommuters in this case.

From a practical point of view, AHS may find the study results beneficial when planning and evaluating current and future telecommuting programs within the organization. The rich data provided by Lync users in this study may be valuable to the AHS Unified Communications Services team as they upgrade the tool and prepare to extend Lync capability to new users throughout the organization.

G. Overview of the Study

The following study report summarizes the literature reviewed about the phenomenon of telecommuting, and the general use of enterprise unified communications system technologies. Media Richness theory is introduced, as the lens used to examine how telecommuters might apply new media to their communication needs. The methodology outlines the case study research design, and how two research instruments, a quantitative survey, and qualitative in-depth interviews were designed and implemented. Following an explanation of data gathering and analysis results, a discussion of the overall research findings is presented along with recommendations related to best practice for this particular case.

II. REVIEW OF THE LITERATURE

This chapter examines literature reviews on the research relating to telecommuting, demographics about who telecommutes, and the associated effects of flexibility, work-life balance, and isolation. A review of how workers apply information communication technologies (ICTs) and unified communications systems to work tasks is provided for context to the study.

A. Literature Reviews on the Research about Telecommuting

There is no shortage of literature related to telecommuting, or telework. Five complementary literature reviews of the telecommuting research undertaken between 1979 and 2002 can be found in Bailey and Kurland (2002), Bélanger and Collins (1998), McCloskey and Igbaria (1998), Pinsonneault and Boisvert (2001), and Siha and Monroe (2006). Following is a summary of the more recent reviews by Bailey and Kurland (2002), and Siha and Monroe (2006). More recent studies that attempt to fill some of the gaps identified in these previous studies are examined along with some of the more widely established benefits and concerns of telecommuting.

Bailey and Kurland (2002) reviewed telework research spanning nearly two decades to determine who participates in telework, why they do, and what happens when they do. Their review of chiefly North American, widely available, peer-reviewed studies found more than 80 published academic empirical studies undertaken between 1982 and 2001, in the disciplines of transportation, urban planning, information science, organizational behaviour, ethics, law, and sociology (p.384). They also considered 50 additional academic studies on telework, primarily essays, focusing on the topics of gender, time and space, methodological issues, legal and union issues, and the future of telecommuting (p.385).

About half the empirical studies in Bailey and Kurland's (2002) review were general surveys that describe data, without presenting any hypotheses. A dozen case studies, "unmotivated by theory" (p.394), typically served as pilot program reports. While this type of general survey and case study research was prevalent in the 1980s, studies matured and increased significantly in scope and rigor throughout the 1990s to include more explicit hypotheses, models, and formal research questions (p.394).

Siha and Monroe (2006), also American researchers, undertook their review of the telecommuting literature to "identify the substantive work, examine the state of this phenomenon as of to date, particularly the failure and success factors, provide valuable insight to the practitioners and research directions to researchers" (p. 455). Their broader view included European journals, and additional telecommuting facets such as managers, the organization, technological and environmental issues. They conducted the review on articles published between 1979 and July, 2002. With just three keywords, *virtual office, telecommuting*, and *telework*, the results returned were "overwhelming" (p. 457). After limiting their review to refereed journals from two major business data bases, the results dropped from 2,132 to 210. Reputable non-peer reviewed articles that added insight and valuable information were added to the list, and articles unrelated to the management discipline were excluded. The number of articles jumped significantly in 1994, and continued to grow in the years following. The term "telecommuting" became more widely used than the "virtual office" or "telework" during the timespan of the study (p. 457).

After Siha and Monroe (2006) further classified their review findings by description, conceptual, empirical, and case study orientations, they found the majority of published articles fell into descriptive and empirical categories, with the bulk of the empirical studies completed in

the last few years of the review period. Very few studies fell into the conceptual and case study categories, however, case studies published in trade and practitioner journals were excluded from their review.

Similar to the findings of Bailey and Kurland's (2002) review, nearly half of the articles (46.8 percent) reviewed by Siha and Monroe (2006), dealt with human resource and workforce issues. Surveys and interviews were employed to examine the motivations, productivity, travel behaviours and other issues of telecommuters. Organizational and management issues were the second largest cluster of articles (30.5 percent), and covered issues related to why organizations implement telecommuting programs, and how they manage them. Surprisingly, even though technology is "the backbone of the telecommuting program" (p. 465), only 12.8 percent of the total articles addressed technology. The fewest number of telecommuting studies were linked to environmental studies related to traffic, air quality, and the impact of technology, such as the consumption of electricity and solid waste.

Bélanger, Watson-Manheim, and Swan (2013) vaguely referred to the issue of "protecting proprietary information or providing secure ICT infrastructure" (p. 1259) when telecommuting. Because AHS is a healthcare organization, security and privacy are critical considerations. However, a survey conducted in 2007 of a "diverse group of 73 organizations from 10 industries in the US, Canada and Europe" (p. 2) by Ernst and Young LLP, in partnership with the Center for Democracy & Technology (CDT), found that "many organization are not effectively managing the risks to personal information presented by the telecommuting workforce. When employees leave the office with the personal information of employees, customers or anyone else affiliated with the business organization, significant privacy and security gaps remain" (p. 23).

Several literature reviews considered by Bailey and Kurland (2002, p. 385), including a review of European work by Haddon and Lewis (1994), were found to align with empirical research seeking to identify benefits and disadvantages of telework. The "lists" of benefits include schedule flexibility, freedom from interruptions, and time saved in commuting, and the drawbacks, such as professional and social isolation have changed little over time.

Among the list of positive outcomes related to telework that related to organizational loyalty and employee retention, a large number of researchers identified improved productivity and job satisfaction outcomes to be the most significant (Bailey and Kurland, 2002). Accounts of increased productivity were derived from self-report data, so may be biased by the majority of teleworkers volunteering or requesting to work at home. As well, a 1997 study by Barauch and Nicholson, and a 1985 study by Olson (as cited in Bailey and Kurland, 2002, p. 389), found a significant number of teleworkers reporting they work too much or longer hours, possibly conflating improved productivity outcomes (p.389).

Challenges unique to telecommuting described by the research include: professional and personal isolation (Gajendran and Harrison, 2007), and difficulty separating work activities from family responsibilities (Ellison, 2004). Additional organizational-related concerns include the nature of jobs, company culture, manager skepticism, employee selection, providing the required infrastructure, awareness of legal considerations, monitoring and performance measurements, and employee isolation and communication (Manochehri & Pinkerton, 2003; Turcotte, 2013).

B. Demographics About Who Telecommutes

A review of the literature suggests teleworkers are predominantly professional men, followed by female clerical workers (Bailey & Kurland, 2002; Turcotte, 2010), however, studies indicate determining differences in teleworker demographics, such as gender, age, and earnings,

proves to be difficult. Due to variances in definitions and sample size, Bailey and Kurland (2002) predict that it may be impossible to get a definitive answer on who teleworks.

Scholars have better luck in their attempts to identify the traits suited to telework, and factors predicting who might telework. Job characteristics suited to telework include having the ability to control one's work pace, and little need for face-to-face interaction. Tasks like knowledge and information processing, marketing and sales, were also reported to suit telework. Bailey and Kurland (2002) caution applying global job categories suited to telecommuting as employee "perceptions of job suitability based on intimate knowledge of specific jobs" (p. 386) may be better predictors of who can telework. Status and power issues can also affect suitability for telework in cases where an employer makes it more attractive to professionals rather than clerical workers to telework, when both task characteristics may be suited to working from home.

Motivations for teleworking, including travel reduction, work-life balance, and manager issues of trust and control, were not borne out in Bailey and Kurland's (2002) review of the research, leaving unanswered the question of why some employees opt to work remotely. Tremblay, Paquet, and Najem (2006) found work obligations, rather than balancing work-family obligations, dictate why employees work from home. This finding supports research models from the transportation literature that identified work-related factors as most predictive, in addition to technology factors. Work factor attributes included: manager willingness; workplace interaction, and self-perceived job suitability; personal discipline; household distractions; preference to work with a team; family orientation; and workaholism (Bailey and Kurland, 2002, p. 386).

Martin Turcotte's (2010) study for Statistics Canada indicates the country saw "substantial growth" (p. 3) in telecommuting through the 1990s; however, the trend between 2000 and 2008, although upward, remained at a "moderate pace" (p. 3). Generally, employees were working from home on a part-time basis, around eight hours per week. In 2008, more than half of all employees working from home were professionals and managers, had a university degree, and had a personal income of more than $60,000 a year. Women were less likely than men to work from home. Predictions for decentralization of the workplace based on the emergence of new information technologies did not materialize. Turcotte writes, "Only a minority of employees work at home, almost none do it on a full time basis, and metropolitan areas continue to grow" (p.7).

The Bank of Montreal Commercial Banking (BMO) commissioned a survey between December 23, 2013 and January 3, 2014, with an online sample of 1,004 Canadians that shows the telecommuting trend continues to slowly rise in Canada and Alberta. Findings released in January, 2014, indicate that 56 percent of Canadian companies offer telecommuting, an increase from 44 percent in 2013. Telecommuting was related to positive impacts on morale and productivity, which support the literature, however quality of work is also listed, which is not as well represented in the literature (Bloom et al., 2013). The primary reasons companies do not offer telecommuting in Canada are for reasons related to decreased morale and productivity. Within Alberta, 49 percent of companies were reported to offer telecommuting. Alberta companies reported positive impacts on employee morale (74 percent), productivity (66 percent), and quality of work (63 percent).

Bailey and Kurland's (2002) review found that empirical research had been "largely unsuccessful in identifying and explaining what happens when people telework" (p. 394). They

caution that authors who apply the common use of research models that construct new studies from results of previous ones to test the traits and advantages of telework from small samples across larger ones, "insulate telework research from broader organizational studies and fail to develop theory-based explanations for observed phenomena" (p.395).

C. Flexibility

The perceived autonomy and flexibility afforded to telecommuters in controlling their work schedules is shown to relate directly to productivity, job satisfaction, work-life balance, and health benefits such as reduced stress (Bloom et al., 2013; Joyce, Pabayo, Critchley, & Bambra, 2010; Gajendran and Harrison, 2007).

Joyce, Pabayo, Critchley, and Bambra (2010) undertook a narrative synthesis of 10 studies involving 16,603 workers who were followed for at least six months, to compare a group of employees with flexible conditions to another group without. Although they say their findings are indicative rather than definitive, Joyce et al. (2010) tentatively suggest that flexible working interventions that increase worker control and choice (such as self-scheduling or gradual/partial retirement) are likely to have a positive effect on health outcomes. The findings support the theory that having control over one's work is good for health.

Increased productivity is one of the top benefits discussed by researchers (Bailey & Kurland, 2002; Bloom, Liang, Roberts, & Ying, 2013; Dutcher, 2012; Pinsonneault & Boisvert, 2001). Glenn Dutcher (2012) attempted to determine the effects of telecommuting on productivity based on performing dull and creative tasks, which could be useful in determining the types of work suited to telecommuting. Results indicate positive implications on productivity for creative tasks, and the opposite for dull tasks. However, the study was conducted with 125

university students who logged in or attended a laboratory setting to play games for a monetary incentive so may not be applicable to a real work situation.

More recently, Bloom et al. (2013) were able to measure the productivity of call center employees in a Chinese airfare and hotel company working from home, by the number of minutes worked, and the number of calls they took. Results showed a "striking" 13 percent increase in performance over the nine months of the study, which they associated to fewer breaks and sick days. In this first randomized experiment on working from home, Bloom et al. (2013) were able to find no impact on work quality.

Outside the benefits of flexibility and freedom, Bailey and Kurland (2002) found limited support for increased satisfaction among telecommuters (p. 389).

D. Work-Life Balance

Work-life balance or work-family balance, comprises the ability of workers to spend more time with their families in the morning and following their work day, complete personal or family obligations and domestic chores, and attend to school and daycare activities, and is identified in the literature as a central motivating factor to telecommute (Kurland & Bailey, 1999; Tremblay et al., 2006). However, the impact of telecommuting on work-life balance continues to be debated when longer workdays and the ability of new information communication technologies to facilitate 24/7 communication are considered (Morganson et al., 2010; Noonan & Glass, 2012).

Canadian researchers Diane-Gabrielle Tremblay, Renaud Paquet, and Elmustapha Najem (2006) analyzed data gathered from a Canadian national Workplace Employee Survey between 1999 and 2002 to determine if work-family balance is the main reason for Canadians to work

from home. They found this to be the case for only a small percentage of telecommuters; two-thirds telecommute because of the demands of their employers.

Morganson et al. (2010) conducted the first study to compare workers at home, satellite offices, client sites, and traditional offices by surveying 587 employees within a single organization. Similar high levels of work-life balance support and job satisfaction were found with home workers and traditional office workers.

Whether or not work-life balance is the primary motivator for employees to consider telecommuting, according to two studies referred to by Tremblay et al. (2006), Felstead and Jewson (2000), and Tremblay (2003), found telecommuters are able to adjust their work-life balance over time (p. 719).

E. Isolation

Isolation, or relational impoverishment (Gajendran & Harrison, 2007) at work is identified as a significant disadvantage of teleworking (Bélanger, Watson-Manheim, & Swan, 2013; Bloom, et al., 2013; Dahlstrom, 2013; Golden, Veiga & Dino, 2008). Professional isolation refers to the "out of sight, out of mind" negative impact working from home can have on employee learning, advancement, and promotion, while social isolation refers more to the loneliness experienced by telecommuters who spend a significant time away from co-workers. Both professional and social isolation can negatively affect working relationships and productivity.

Golden, Veiga, and Dino (2008) hypothesized and tested links between professional isolation and the job outcomes of performance and turnover intentions using survey data from 261 professional teleworkers and their managers. Results indicate professional isolation negatively impacts job performance. Contrary to their expectations, however, isolation reduced

turnover intentions. The impact of isolation was increased by the amount of time spent telecommuting, and decreased by more face-to-face interactions and "access to communication-enhancing technology" (p. 1412).

Cooper and Kurland (2002) compared the impact of telecommuting on private and public employee's perceptions of professional isolation. They applied a grounded theory methodology, utilizing semi-structured interviews with 93 telecommuters, non-telecommuters, and their respective supervisors in two high technology firms and two city governments. Findings indicate that professional isolation experienced by telecommuters affects employee development activities like interpersonal networking, informal learning, and mentoring, but is less likely to hinder the professional development of public sector employees than that of employees in the private sector (p. 511).

Bloom, et al., (2013), in their nine-month study of Chinese call center workers that used isolation as a research variable, found that although attrition fell by 50 percent among homeworkers, rates of employee promotion based on performance decreased by about 50 percent.

F. **Unified Communications Systems**

The Researcher could find no theoretically based empirical studies of unified communications technology systems being utilized in distributed work environments or by telecommuters, outside of individual components like presence, email, IM, and web conferencing (Aaltonen and Eaton, 2009). This paucity of literature supports Siha and Monroe's (2006) review of more than 200 articles which found only 12.8 percent chiefly dealt with technology. Although computer mediated communication technologies are rapidly emerging, Reimer, Frößler, and Klein (2007) say "their potential impact is not well understood nor do we

have a well founded knowledge about how distributed teams use these technologies and how they can use it productively" (p.287). In addition, the literature related to Computer Supported Cooperative Work (CSCW) and virtual teams do not address telecommuting (Bélanger et al., 2012, p.1268).

There is no question that distributed workers need to communicate, and will adopt the technology at hand to fit their work tasks. Organizations today rely upon communication that is fast and accurate in order to make optimal decisions. Individuals, teams, and groups spend their work days exchanging information and knowledge, asking questions, collaborating, and making decisions. Murray and Peyrefitte (2007) in their study of the knowledge transfer process found that the transfer of knowledge within organizations is vital, as it fosters learning and the creation of new knowledge, while enabling organizations to better respond and adapt to critical situations. Lee, Watson-Manheim, and Ramaprasad (2009) examined the use of a mix of information communication technologies (ICTs), either single or multiple, for communication in the workplace of a global IT consulting company where workers were geographically distributed between the United States and India. Although not related to telecommuting, results showed that communicators, in their efforts to overcome the constraints of distance and time, prefer to employ a mix of ICTs for communication and collaborative tasks, and that multiple ICTs were used more frequently than a single ICT.

Although Microsoft publishes their own case studies by industry about the effectiveness of Lync for communication and collaboration, and a few industry reports about its use and deployment are available on the internet, the Researcher was unable to find any independent empirical studies that specifically addressed Microsoft Lync, or the implementation of any

specific unified communications systems, outside of separate email and instant messaging applications.

Jeffrey North (2010) of Forrester Research, Inc. conducted a study commissioned by Microsoft, of organizations upgrading to Lync Server 2010. One-on-one interviews were held with12 different organizations. In addition to cost savings for web- and teleconferencing, telephone systems, IT maintenance, and travel, increased user productivity was "conservatively assessed at more than $12 million over three years" (p. 3). This potential benefit was predicted to increase based on the business needs for speed, geographic proximity of distributed work teams, and the roles and culture of the users. The benefits of increased user productivity come from faster processing, and improving the human factors that slow processes down, through the use of features like presence and instant messaging (IM) (p. 4).

In their review of studies of collocated and noncollocated synchronous group collaborations conducted in both the field and the laboratory, Gary Olson and Judith Olson (2000) concluded that distance will continue to matter for collaborative work at a distance, and even though collaborative tools will assist in accomplishing collaborative goals, "there will likely always be certain kinds of advantages to being together" (p. 173).

G. Literature Review Summary

In response to the large number of mixed empirical findings in the literature related to the demographic picture of telecommuters, the advantages and disadvantages of this work arrangement, and the use of unified communications systems, Kahai and Cooper (2003) suggest "the simple answer to this question is that there is no simple answer" (p.289). However, here are some of the common themes and findings that emerged from the literature.

At first glance, telecommuting appears to be the answer to meeting the complex needs and issues impacting today's organizations and workforces. However, the Researcher found that the more in-depth the literature on telecommuting is reviewed, the more difficult it is to conclude if it is generally good or bad for employees, or for organizations. Telecommuting attracts attention from multiple disciplines, including management, transportation, real estate, and information systems to name a few. The use of additional terms like *telework,* plus a variety of definitions of what constitutes a telecommuter, such as work location and frequency make much of the research literature difficult to apply and compare to the case under study. The literature suggests that until concrete definitions and qualifications of telecommuting can be established within the various fields and disciplines of research, building effective models and theories will be difficult, and results will continue to be contradictory (Bailey & Kurland, 2002; Bélanger et al. 2013; Gajendran & Harrison, 2007; Siha & Monroe, 2006).

Further hindering the research on telecommuting are the research methodologies employed by scholars. The 32 practitioner and academic articles reviewed by McCloskey and Igbaria in1998, were found to be "hampered by definitional problems, methodological weaknesses (e.g. small sample sizes), and a lack of control of important variables" (as cited in Bailey and Kurland, p.385), although rigor appeared to be improving. Bélanger et al. (2013) also report finding methodological weakness. Gajendran and Harrison (2007) believe that "telecommuting's consequences need time to develop and cohere" (p. 1536), and therefore recommend studies be conducted in natural settings over time.

Indeed, studies employing single experiments conducted with students in a laboratory (Dennis, & Kinney, 1998; Kahai & Cooper, 2003), or hypothetical situations (Daft, Lengel, and Trevina, 1987) may not be comparable to the typical communication, collaboration, and

decision-making tasks being performed by today's employees in settings where the need for speed, clarity, and feedback is essential, and can change quickly.

Although telecommuting involves multiple, complex, and inter-related factors, only Siha & Monroe (2006), and Bélanger et al. (2013) highlighted the significant importance technology plays in the ability for organizations and their employees to benefit from telecommuting.

The bulk of the literature aligns with Siha and Monroe (2006), who concluded from their review of more than 200 studies that, "from a scholar's viewpoint, the research on telecommuting is only beginning to scratch the surface" (p. 468). Future studies are called for that focus on a better understanding of the motivations of workers, managers and organizations to "better understand all of the nuances" (p.468) of telecommuting, to understand best practice for telecommuting program implementation, as well as the associated technological aspects and environmental effects.

The purpose of the present study, therefore, is to fill the void identified by Siha and Monroe (2006) for more studies related to the technological aspects of telecommuting. A strength of this case study is that, rather than analyzing the results obtained from presenting hypothetical situations to telecommuters in a laboratory setting, it examines a variety of real-life telecommuter roles, telecommuters' actual needs for communication and collaboration, and how telecommuters apply a specific unified communications technology to perform these tasks.

III. THEORETICAL FRAMEWORK

Media Richness Theory (MRT) (Daft & Lengel, 1983), also referred to as information richness theory, was applied to this case study as a guide to provide insight and better understand how telecommuters might choose to communicate and collaborate at a distance using information communications technologies (ICTs).

The concept of MRT was first introduced in 1983 by Richard Daft and Robert Lengel to explain "how organizations cope with the environment, coordinate activities, and solve problems through information processing" (p. 5), based on the premise that in order to be successful, organizations must be able to process information according to appropriate richness, in order to clarify ambiguity and reduce uncertainty (p. 5). Information richness is "the ability of information to change understanding within a time interval" (Daft and Lengel, 1986, p. 560). Communications media used to exchange information were classified using a hierarchy of media richness based on four factors: 1) the capacity to provide immediate feedback, 2) the ability for multiple cues, 3) the ability for personalization, and 4) the ability for natural language.

Face-to-face communication is considered the richest form of communication for processing information because it provides immediate feedback to the communicators which enables confirmation of joint understanding and interpretation, in addition to being the most personal means of communication in nature. Cues like body language, voice, and facial expressions that "convey information beyond the spoken message" (Daft and Lengel, 1983, p. 9) can be observed (pp. 8-9). A framework was devised to classify communication media according to their capacity for feedback, visual cues, personalization, and language variety, decreasing from face-to-face communication, down to telephone, personal documents like letters and memos,

impersonal written documents, and numeric documents. Below is a more recent depiction of the framework:

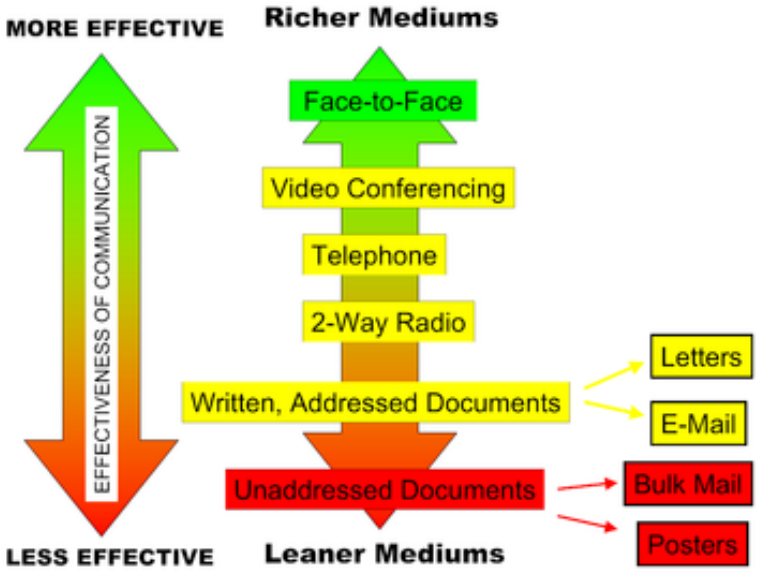


Figure 1. MRT lean and rich medium. Created by Tntdj for Wikipedia. Used with permission.

Grounded in the early work of several communications theorists and researchers (Daft and Lengel, 1986), Daft and Lengel propose that two forces influence information processing in organizations: uncertainty, and equivocality. Organizations process information to reduce uncertainty and equivocality. Uncertainty can be defined as the absence of information; as information increases, uncertainty decreases. Managers ask questions to obtain new data so that they can perform their tasks with reduced uncertainty (p. 556). Equivocality differs from uncertainty in that it "presumes a messy, unclear field" (p. 554), involving ambiguity, conflicting interpretations, lack of understanding, and confusion. Equivocality makes it more difficult to know what questions to ask, or to understand what answers might be given (p. 556).

Since Daft and Lengel proposed MRT, many studies have applied it to a variety of communications media. Studies after 1990, following the evolution of new communications

media, suggest that media richness alone does not determine the ability to effectively solve equivocal tasks (Dennis & Kinney, 1998; Illia & Roy, 2001; Sevinc & D'Ambra, 2004).

Applied to computer-mediated technologies, MRT would interpret email, IM, voicemail and videoconferencing as leaner, and less suited to equivocal problem solving and decision-making tasks than face to face.

Illia and Roy (2001) argue that MRT may still offer some validity if technological richness is included in evaluations of media richness. They cite studies by Culnan and Markus (1987), Sproull (1991), and Markus (1994), who recommend that the capacity to store and retrieve messages or information are two additional criteria that should be taken into account when evaluating media richness.

Perhaps due to the fact that organizations will always be messy places, challenged by uncertainty and equivocality, MRT remains a valid theory for examining today's advanced communications technologies.

IV: METHOD

As stated previously, telecommuting is a relatively new phenomenon within Alberta Health Services, the large organization under study. With no formal program yet in place to support or monitor employees working from home on a casual or regular basis, it is unknown how many employees are currently working from home, in what roles, and where they work from home throughout the Province.

A. Research Design

A qualitative research design was selected by the Researcher to gain a more comprehensive understanding of these generally unknown employees and to explore how effectively they are able to utilize Microsoft Lync 2010 for communication and collaborative tasks while working from home.

The well-known and widely accepted qualitative research study approaches presented by Robert Yin (2009, 2012) and John Creswell (2009, 2013) were consulted when choosing the research design and methodology for this study. The inductive, interpretive, and holistic research approach applied a Media Richness Theory (MRT) theoretical lens, relied upon the researcher for data collection, and was undertaken in the participants' natural setting. Multiple methods of data collection were employed to gather participant meanings.

1. Instrumental case study

The qualitative research methodology chosen for this study is the instrumental case study approach, which is applied to examine a real-life contemporary bounded system, or case, over a specific time, through in-depth data and information collected from multiple sources.

The "case" of this study is defined as the Alberta Health Services organization and bounded by its employees who work from home at least 15 hours each week and also by the

particular software, Microsoft Lync 2010, used to communicate and collaborate when telecommuting.

To aid in an in-depth understanding of the case, data was gathered using two methods: 1) online survey - both quantitative and qualitative data were invited from eligible participants through an online survey, and 2) personal in-depth interviews invited from employees who completed the online survey - to gather rich qualitative data about telecommuters, the Lync tool, and particular tasks and situations that could not be shared in the online survey. Personal interviewing is considered an integral part of gathering data in qualitative research, and a common means of capturing the perspectives and experiences of participants. "Interviews are well respected by most qualitative researchers, so they have credibility among those working in the field" (Savin-Baden & Howell Major, 2013, p. 371).

Centered on the Researcher's desire to explore the issue of how AHS telecommuters utilize the communications tools implemented by their organization to conduct their work from home, this instrumental case attempts to provide a thorough description of this one particular case as illustration of this phenomenon.

2. Organization of the study

The study was conducted in two parts. The specific methods, or instrumentation, used for collecting data included Part A, an online census survey, and Part B, selective personal semi-structured interviews. Data were collected between April 29, and July 3, 2014. At the time this study was undertaken, about 16,000 employees were enabled with Lync throughout the organization.

Part A data were collected using a predominantly quantitative approach. A link to an online survey was emailed to all Lync users in the organization for participants to self-select

based on the provided eligibility criteria. In addition to quantitative answers, the survey provided opportunities for participants to provide text-based qualitative responses to particular questions.

For Part B, a qualitative approach was employed to collect data during personal interviews with participants who volunteered at the conclusion of the online survey.

Because of the two different parts, or phases, of data collection, and for the sake of clarity, the two methodologies will be discussed separately. Following an explanation of the study's data collection methods, triangulation, validity and reliability, Researcher's role, ethical considerations, challenges, and outcomes of the study will be discussed.

B. Part A Online Survey

1. Target population

To ensure the sampling was "strategic and purposive" (Miles, Huberman, & Saldana, 2014, p.32), only AHS employees who work from home at least 15 hours per week and utilize Lync for their work were studied to ensure a homogeneous population with significant experience working from home and the desired extensive use of the software tool.

2. Sample

The sampling of employees contained within this specific context was achieved through self-selection. Participants who met the criteria of working from home at least 15 hours per week self-selected themselves from the larger pool of Lync users who received the email invitation to participate.

To gain a broader understanding of who in AHS is telecommuting, and the roles and tasks that suit telecommuting within the organization, all AHS employees who met the study criteria were invited to participate, even though they were unknown, rather than choosing a smaller

purposive sample from a single department where telecommuters may have been easier to identify.

Within-case sampling was iterative in that as participant responses to the survey were analyzed, additions or revisions to the subsequent personal interview questions were made to more fully investigate patterns and clarify emerging themes in addition to exposing contrasts and negative instances.

3. Data collection

Data in Part A of the study were collected through a structured online survey that included both closed- and open-ended questions that provided participants with an opportunity to expand upon a closed-ended question. The survey software generated exact percentages and provided qualitative responses in a spreadsheet format for analysis. An incentive draw for a $50 gift card was offered; the odds of winning were 1:100, based on 100 responses.

Development of the online survey instrument. A census survey was designed to capture the largest group of eligible participants from as many geographical provincial zones and employee roles within the organization as possible. Questions were developed based on the literature review, theoretical lens, and the Researcher's knowledge of the Lync components under study.

SelectSurvey, a web-based survey application provided by the organization, was used to design and host the survey. The Researcher was given password-protected access to the online survey tool to design the questions, analyze data, access email addresses of participants volunteering for a personal interview, and access email addresses of participants who chose to be entered into the draw for a $50 gift card.

Nominal, ordinal and some interval level measurements were devised to measure the degree of satisfaction of variable attributes related to experiences working from home, and the use of Lync to perform particular tasks such as collaboration; sharing information and ideas; decision making; and, for social exchanges. Open-ended questions invited participants to expand on particular issues of interest.

Content of the survey. The opening question of the online survey reminded participants of the eligibility criteria and asked for the average number of hours worked from home each week: this question prevented those who did not meet the criteria from completing the rest of the survey.

The first section of the survey asked questions related to telecommuting: how participants began working from home, for how long, benefits, concerns, and overall satisfaction with the practice.

The second section asked about the use and satisfaction with various Lync components such as instant messaging (IM), presence status, video, and desktop sharing, and their needs to find and share information, collaborate and share ideas with others, make decisions, and interact socially.

Open-ended questions were included in the first two sections to capture qualitative data related to the benefits and concerns participants had about working from home, and their opinions on the quality of their Lync experiences. The final section of the survey captured demographic data.

In addition to capturing the largest number of eligible employees, the survey was a means of recruiting volunteers to participate in the qualitative interviews.

Pretesting the survey. A pilot test was conducted to identify any issues with wording or context in an effort to maximize survey response rates and to ensure the survey could be completed in about 15 minutes. Minor changes were made to survey formatting for simplicity. Employee roles were updated to reflect recent organizational changes, and a few measurements refined for clarity.

Advantages and disadvantages of using the survey. The Researcher preferred the online survey tool because it was a secure online in-house survey tool utilized by Alberta Health Services that provided accessibility, ease of use, access to support, and a secure database for analyzing and storing results. Accessing this resource required the Researcher to complete a web survey request form that was submitted by email with the survey questions and the approval letter from the University of Alberta's Research Ethics Board.

Research indicates that incentives can influence survey response rates (Singer & Ye, 2013). Because the number of telecommuters eligible to participate was unknown, it was hoped offering an incentive would increase participation. However, the decision to include an incentive proved to be problematic and caused considerable delays, at the University of Alberta Research Ethics Board level, and more particularly within AHS. The University of Alberta Research Ethics Board applied their guidelines on the compensation of human research participants approved by the University Committee on Human Research Ethics to the draw, which stated that employees eligible to participate only had to answer the first question in order to enter the draw. Odds of winning had to be stated within the online survey and adhered to. Because the size of the target population was largely unknown, an extremely high response rate could have potentially resulted in a considerable financial expense for the Researcher. A skill-testing question was required in order to "win" the draw.

A sample of the online survey is found in Appendix A.

4. Conducting the research in Part A

Because no sampling frame existed of employees who fit the eligibility criteria, all Lync users were emailed information about the study, with an invitation to self-select based on provided eligibility criteria. The Lync service owner, who controls access to the Lync user email address list, emailed all Lync users on behalf of the AHS Research Sponsor on April 25, 2014. Users numbered just over 16,000 at that time. The Research Sponsor is the AHS Provincial Director of Unified Communications Services, responsible for the deployment and management of the Lync service. The email introduced both the study and the Researcher, and outlined the eligibility criteria for participation. He indicated that the study was not initiated by the organization, but was being conducted as part of a University of Alberta graduate program exercise and that data would not be accessible or used by AHS.

Following the Research Sponsor's introduction of preliminary text to the survey, the Researcher provided additional information, including a reminder that participation in the survey indicated consent, how long the anonymous survey would take to complete, deadline for participation, what was planned for the survey results, and how responses would be safeguarded. The Researcher's contact information followed along with a link to the online survey.

At the end of the survey, participants were given an opportunity to provide their email address to be entered into a draw for a $50 gift card and/or volunteer to be considered for a personal interview. Chances of winning were indicated to be 1:100. To ensure anonymity, those who wished to participate clicked on a link to a separate survey page where they could enter their email addresses for either the draw and/or to volunteer for the interview.

Participants were given two weeks to complete the survey. During the last week of the survey period, a reminder reiterating the purpose of the study and eligibility criteria was emailed to all Lync users.

Within the first hour after the invitation was emailed to all Lync users, 165 employees responded to the survey. The speed and number of immediate responses greatly exceeded the Researcher's anticipated 100 total responses over two weeks. Comments were also emailed to the Researcher from employees who telecommute but did not meet the eligibility criteria of working from home at least 15 hours each week, but who wanted to provide feedback about their experiences using Lync. The overall sense within the emails was that the topic was relevant to the organization, and employees were pleased that telecommuting and Lync were being investigated. When the online survey closed, 712 employees had responded to the link to the survey.

Not all of the 712 respondents, who accessed the survey, actually participated. This was likely because, to confirm eligibility, the first question asked participants to indicate the number of hours, on average, they worked from home. If they did not work at least 15 hours a week from home, they were asked not to participate.

Eighty-eight surveys were not complete, and therefore not included in analysis. These appeared to be click through responses by respondents who were only interested in entering the draw. Surveys were fully completed by 423 employees. Four of these respondents were discovered to be ineligible and were not counted. After scrutinizing all the returns, a total of 419 online survey responses were used for data analysis.

Email addresses were entered by 312 respondents for the incentive draw. Based on odds of 1:100 for the incentive draw for gift cards, three names were randomly selected from the

email addresses provided using the random number generator in Excel. Winners were required to answer a skill-testing question in order to claim their prize.

C. Part B Personal Interviews

1. Target population

To augment the data captured from the online survey, personal interviews were included in this study to strengthen internal validity, capture new or diverse views, and explore the more in-depth experiences of employees utilizing Lync while working from home that could not be shared in the online survey.

It was hoped at least eight survey respondents would volunteer for a personal interview. The Researcher was surprised and gratified to receive 164 expressions of interest from potential interviewees, a number that far exceeded expectations and perhaps reflected AHS employee interest in the topic. Using the email addresses of interview volunteers, participants were selected to provide a representation of genders, a variety of roles within the organization, and the different Alberta geographic health zones.

2. Sample

As advised by Miles et al., (2014), sampling attempted to be feasible and ethical while studying the characteristics and interactions of employees in different "settings, events, and processes" (p.36) to determine typical instances as well as negative or atypical instances.

Twelve interview candidates were selected to represent both male and female employees, a variety of roles, and each geographic AHS health zone. All invitations to participate were accepted except for one, who cited a medical reason for declining. Participant roles included analyst, developer, site lead, manager, senior director, and executive director roles from a variety of provincial and operational teams and departments.

3. Data collection

Due to the geographic spread of participants throughout the province, face-to-face interviews were not possible due to time and cost. Conducting the interviews virtually, using Lync technology, enabled the Researcher to include a diverse sample, and to observe participants while working from home and using the tool.

Interviews were designed to capture the perspective and experiences of the participants through natural conversation. Semi-structured interview questions were developed in relation to the research problem and in parallel with the online survey questions, but this preparation was done with the knowledge that based on survey results and responses received from participants, questions could be added or modified as needed, as the interviews progressed.

Development of the interview script. An interview script was developed and followed by the Researcher to ensure consistency in the order and manner the questions were posed to participants, and to ensure that information from each topic was collected.

Interview questions were developed from the literature and related theories, Lync features, and findings from the online surveys. The questions were semi-structured which gave the Researcher the freedom to adapt them as needed for more personal engagement with participants while ensuring there was comparable data for comparison across all interviews.

The interview script also acted as a checklist, reminding the Researcher to review the study purpose and outcomes with participants, obtain verbal consent for the video recording, and invite them to ask any questions about the survey or interview.

Content of the interview script. Interview questions were divided into three topics. The first set of questions related to the topic of telecommuting. Telecommuters were asked how they began working from home and when; benefits and concerns they were experiencing; the

importance of a presence online or in person; attitudes of coworkers and expectations of managers; what it is about the work they do that makes it easy or difficult to work from home; and how they feel about working from home.

The second set of questions related to the topic of work tasks and the application of Lync. Participants were asked how knowledgeable they are about Lync's components and how confident they feel in applying them to their work tasks. They were asked about their need for finding or sharing information, collaborating and brainstorming ideas, making decisions, and socializing, and about how they use Lync to perform these tasks. Then they were asked to provide examples of a task or situation where Lync enabled them to perform their job more efficiently and effectively, as well as a situation where Lync hindered or negatively affected the outcome.

The last set of three questions asked for participants' opinions about what would improve their experience working from home, how important a formal alternative workplace arrangement program would be to employees, and how the Lync service could be improved.

Pretesting the interview script. A pilot test was conducted to ensure questions were clear and not leading, and that it would not take more than one hour to conduct the interview. Based on continued review of the literature and responses from the online survey, four questions were added to the interview script. These new questions focused on colleague attitudes; manager expectations; the types of work participants do that make it easy or difficult for them to work from home; and, what would improve their overall experience working from home.

Advantages and disadvantages of conducting interviews. Though considerable quantitative and qualitative data were collected through the online survey, interviewing enabled

the Researcher to speak directly to telecommuters and get insight and first-hand accounts directly from Lync users about their experiences working from home.

Using Lync's video recording component provided several advantages to the Researcher. Telecommuters from every geographic zone in the province representing a variety of roles could be included without the Researcher having to travel to meet with them in person. Participants could be observed in their home environment. The Researcher could watch for facial expressions, and posture positions and eye contact, and allow the Researcher to focus on the conversation without taking notes or interrupting participants. Participants could use the Lync desktop sharing component to show or demonstrate information to the Researcher. In addition, the ability to adjust the video playback speed aided in the verbatim transcription, while providing the ability to go back and review sections as needed for comprehension. All videos were of good video and audio quality except for two in which audio was lost for less than ten seconds.

Disadvantages with conducting the interviews remotely all related to technology issues. One participant unexpectedly did not have a video camera and two experienced difficulties that prevented the Researcher from seeing them, though all three could see the Researcher. Another participant could not see the Researcher, though they could be seen. Even though the Researcher is familiar with troubleshooting the technology, these issues could not be overcome.

Lync 2010 saves video recordings into a file on the user's computer hard drive in a format that only enables playback. To back up the video files for security and transcription, they must be published into a .wmv or other format that enables sharing and different playback speeds for transcribing. When the Researcher experienced problems publishing the interview videos into .wmv format, it took about a month's time to confirm and resolve with AHS IT support that the problem was related to a computer failure and not to the Lync software.

A sample of the interview script is found in Appendix C.

4. Conducting the research in Part B

Following selection of the 12 interview candidates, the Researcher utilized Microsoft Outlook's calendar feature, Scheduling Assistant, to determine the availability of potential interview candidates. Once interview dates and times were determined, participants were emailed an invitation from the Researcher's university email address to participate in a personal interview with the set day and time. The invitation outlined how the interview would be conducted and recorded, how long it could be expected to last, types of questions that would be asked, and that a transcription of the interview would be returned to them for validation and approval purposes. Participants were also made aware they could ask to have collected data withdrawn from the database and not included in the study prior to analysis and reporting, or within five days following their participation. A consent form was attached for each participant to sign, scan, and return via email to the Researcher. The Researcher then also signed the form, scanned it, and emailed it back to the participant.

A sample of the information letter and consent form is provided in Appendix B.

Because it was optimum for participants to be studied in their natural settings to gain the most authentic data possible related to the research context, personal interviews were conducted remotely with participants while they were working from their homes, and not from an AHS site. This allowed the Researcher to interview them in their actual homeworking environment; cubicle environments common in the organization were not conducive to private, personal, and anonymous interviews. The Researcher conducted all interviews from her private AHS office location to ensure privacy and the best possible network connection with the software.

Interviews were conducted using the Lync desktop videoconferencing component that enables the recording of online sessions. In addition to written consent, verbal consent to be interviewed and recorded was obtained from each participant at the time of the interview and recorded.

Following Daniel Turner's (2010, p.757) guide to qualitative interview design, participants were reminded of the interview purpose; the format and expected length of the interview; that their responses would remain confidential; that they would be given an opportunity to add additional information and ask questions; and that they would be emailed the transcript for validation and approval. They were not obliged to answer any specific questions and could change their mind and withdraw at any time during the interview.

Engaging participants in open-ended questions as a means to capture in their own words their interpretations, perspectives, and points of view, the Researcher placed particular emphasis on being sensitive to meanings and emerging patterns. The semi-structured interviews provided flexibility for capturing additional important and relevant ideas and information while ensuring that the same concepts were covered in all interviews. In addition to questions related to personal experiences working from home, participants were asked to describe instances of tasks associated with exchanging information and ideas, making decisions, and social interaction typically encountered while working from home, and to reveal their perceptions and opinions of the relevance and efficacy of Lync to perform those tasks.

Following recommendations for interviewing in Savin-Baden and Howell Major's (2013) comprehensive qualitative research guide, the Researcher initially asked participants low-risk direct and linear questions to provide background information and establish a foundation for more in-depth narrative and probing questions (p. 395). Contrast questions encouraged

participants to think about extreme cases, for example, where Lync enabled them to perform their work more effectively, but also where it hindered the outcome. Evaluative questions asked participants to make choices, such as what would improve their experience working from home, and how important alternative workplace arrangement programs might be for employees. Comparative questions enabled participants to put their own experiences in perspective, such as the importance of having a presence online and/or in the office (p.365).

To get participants to verify or expand upon a particular response, the Researcher asked verification questions or paraphrased in order to check understanding. Prompts and probes encouraged participants to elaborate or go deeper into an idea or example, and follow-up type questions elicited additional information in order to clarify and confirm information. And finally, closure questions were used to conclude a line of questioning or idea (Savin-Baden & Howell Major, 2013, p.366). Interviews lasted an average of 40 minutes to one hour.

The Researcher transcribed interviews verbatim into a Word document table, and included video time entries for each question. Participants were emailed their transcript for validation and approval. Text was cut-and-pasted from the Word document tables into Excel spreadsheets for organization and coding. To meet AHS research ethics requirements, all participants were assigned pseudonyms prior to reporting the findings. All observations and evidence were documented, classified, and cross-referenced for recall and examination during the study.

D. Data Organization, Coding, and Analysis for Parts A and B

Johnny Saldaña's second edition of his book, *The Coding Manual for Qualitative Researchers* (2013) was consulted as a resource for establishing coding methods.

Having performed a literature review on the various concepts under study, it was inevitable that the Researcher would develop some preconceived notions about those concepts. The process of bracketing, setting aside personal opinions and preconceived beliefs about the issues under investigation, was used by the Researcher to minimize as much as possible before data analysis the influence of the Researcher's preconceptions of the phenomenon of telecommuting, computer mediated communication, and the use of Lync. An effort was made to understand participant experiences and reduce bias by not making judgments and remaining open to what the data revealed. Bracketing assisted the Researcher in analyzing the data more honestly and objectively (Merriam, 2002, p.7).

The survey software transferred data into an Excel format file for easy organizing and sorting for coding. Manually coding data on printouts proved a laborious task that required codes to be reentered into the database, essentially doubling the task. The Researcher found it easier to add codes as needed to the database during the analysis process, which significantly reduced the time spent on coding, particularly during initial, or first cycle coding.

1. Coding methods

Based on the phenomenological questions designed to explore and understand participant experiences and perceptions from their point of view, the Researcher ascertained that more than one coding method would be required to analyze the different topics and significant amount of data provided from participant response. Coding methods used in first cycle coding included those described by Saldaña as: Attribute, Initial, Descriptive, Magnitude, Subcoding, Simultaneous, In Vivo, Process, Holistic, Provisional, and Themeing the Data. Coding methods used during second cycle coding included Pattern Coding, and Theoretical Coding.

Data generated by both the surveys and the interviews was performed as pre-coding. During this initial review of the text, words or phrases that struck the Researcher as significantly relevant were noted; and then highlighted, circled, or underlined. Following the pre-coding review, initial coding was performed. Particular responses were examined more closely for comparing differences or similarities.

This first cycle coding of the data utilized exploratory coding methods. Provisional codes provided the starting list, and were based on an initial list of researcher-generated codes for the broad topic areas, determined from the study's conceptual framework, the Lync technology itself, the literature, as well as from the research questions. Provisional codes included: Benefit, Concern, Collaboration, Productivity, Presence, Isolation, and Work Environment. Descriptive codes attempted to categorize data, not to condense the content, but rather to summarize the data into categories of topics the participants were talking about or writing about (Saldaña, 2013, p. 87). Holistic coding involved assigning a single code to large units of data "to capture a sense of the overall contents and the possible categories that may develop (p. 141). Words or phrases, such as "flexibility," and "audio doesn't work," that stood out to the Researcher within original data records were applied as In Vivo codes. The density, or richness, of some data made it difficult to assign only one code, and required the application of simultaneous coding with two or more codes. For example, some participants connected not having to commute with reduced stress, cost savings, additional time, and increased productivity.

Following initial coding, second cycle coding involved subcoding the data with second-order tags "to detail or enrich the entry" (Saldaña, 2013, p. 77). For example, data coded under Health could be subcoded according to Stress/Anxiety/Calm; Illness/Injury; Decreased Sick Days; Energy; Exercise; Food/Eating/Nutrition. For particular issues, such as Lync audio issues,

magnitude coding was used to demonstrate the number of times the particular word was mentioned.

Throughout analysis, the Researcher referred to analytic memos to collect personal thoughts, ideas, and questions related to the research questions, coding choices, and personal connections to the participants and their experiences.

2. Triangulation

Multiple data sources, incorporating both quantitative and qualitative approaches, were used in the study. In the quantitative approach, Part A, data were obtained through an online survey, while Part B data were collected from personal interviews selected from volunteers from the online survey.

In addition to the census survey and personal interviews, an organization-sponsored survey of AHS Lync users conducted in 2012 was consulted in the study to provide context for the current research project and compare certain some general outcomes. The following table outlines the data collection approach:

Data Collection Approach	
Online Survey	Used to capture feedback from as many eligible participants as possible, and to get a sense of the target population.
Interviews	Semi-structured interviews with participants in different geographic zones and professional roles were audio and video taped, transcribed verbatim, and returned to participants for verification.
Observations	• Field notes gathered during data collection, as an observer. • Emails to Researcher about the study from employees who did not meet eligibility criteria.
Documents	Previous study of Lync users undertaken by the organization in 2012.

Figure 2. Data collection approach

Rather than considering triangulation for defined truth, correlating or contradictory findings were sought to enrich the understanding of multiple realities, and add to the insights and richness of the study (Merrigan, Huston, & Johnston, 2012, p. 77).

3. Validity and reliability

As a case study, data were gathered from participants' personal experience, intuition, and tacit knowledge, and as such, formal traditional validity and reliability measures did not apply. To increase internal validity, the following strategies were employed:

1. Data gathering instruments were pre-tested. Online survey and personal interview questions were tested for clarity and relevance prior to use.
2. Triangulation of data. Data was collected through a survey, personal interviews, a former study undertaken by the organization, observations, and document analysis.
3. Member checking. Interview participants served as a check to validate and approve the information in their transcripts.
4. Clarification and minimization of research bias. Researcher bias is articulated in the Researcher's Role section of this study, below.

4. Researcher's role

The Researcher attempted to engage in the interpretive process with "no pre-formulated or pre-constructed explanations or predictions" (Merrigan et al., 2012, p. 59), however, the Researcher is an AHS employee within the AHS Information Technology Services (IT) department, and a Lync user with knowledge of using Lync to perform collaborative tasks from home. She participated in the proof-of-concept pilot project of the Lync software and has been using it for at least four years.

Due to these experiences working within the organization as a member of a geographically distributed team that uses Lync, and due to the Researcher having experienced the phenomenon of working from home, the Researcher brings certain biases to this study. Every effort was made to ensure objectivity, however, these biases may shape the way the Researcher viewed and understood the data collected and influence the ways she analyzed and interpreted it. These factors were recognized and bracketed by the Researcher to allow the perspectives of the target population to emerge.

The study commenced with the perspective that the AHS organization is large, diverse, and still largely unsettled six years following its formation. In addition, telecommuting within the organization is presently an informal activity, although the organization is considering the implementation of a formal alternative workplace arrangement program to support organizational and employee benefits. As a professional business communicator, the Researcher views understanding the relationship between current telecommuting practices and unified communications technologies as a critical component to the implementation of a successful alternative workplace arrangement program.

5. Ethical considerations

University of Alberta Research Ethics Board approval was required by AHS to be in place prior to pursuit of academic research within the organization. As partial fulfillment of a University of Alberta graduate degree in communications and technology, the study proposal was first submitted to the University of Alberta Research Ethics Board (REB). Following approval by the REB, a formal study proposal was submitted to AHS.

Securing all the required permissions to conduct this study proved to be a multi-layered, complex, and lengthy process, further complicated by administrative changes within AHS during

the research period. The Researcher's University of Alberta capstone project supervisor acted as the "academic advisor" required by AHS to take responsibility for the scientific integrity of any research project from an academic institution recognized by AHS. In addition, the Researcher also required an AHS Research Sponsor to assess and approve the operational impact of the project on AHS resources. Organizational policy states employees cannot be recruited directly by researchers, and email lists are not shared with researchers, so all email recruitment had to be approved and initiated by the appropriate repository owner who was, for this study, also the AHS Research Sponsor.

It is the Researcher's foremost obligation to respect the confidentiality of participants. This was of particular concern in this study where participant roles and locations are highly visible, and because the organization takes seriously the protection of employee information. Research involving AHS information must be conducted in compliance with Alberta privacy legislation. This study was governed by the *Freedom of Information and Protection of Privacy Act* (FOIOPPA) as it involved the recruitment of staff through AHS email and resources in order to collect, use, and disclose AHS information that was not health information for research.

Data collection also met FOIPPA requirements, and the AHS Privacy Office requirements for a Privacy Impact Assessment (PIA) regarding the use and/or disclosure of identifiable health information. AHS also required online completion of an Alberta Research Ethics Community Consensus Initiative (ARECCI) Ethics Screening Tool to determine if the project was a research or Quality Improvement/Evaluation project, and to determine the level of risk to patients/staff from an ethics point of view. The AHS Research office stipulated that all names and identifying information such as title, and easily identifiable towns or sites must be removed from data prior to reporting.

The nature of conducting qualitative interviews makes anonymity impossible, however, the Researcher employed the following safeguards to protect participant identification: 1) research objectives were articulated in writing, and verbally, to ensure they were clearly understood by participants; 2) written consent was obtained by interview participants prior to meeting, and verbal consent given before audio and video recording occurred; 3) verbatim transcriptions were returned to interview participants for verification and approval; and 4) participant identifiers such as name and title, and in some instances, geographical location and facility, were not used when reporting the data to ensure participant anonymity. Because AHS policy demands that employees not be identified in the culminating research report, pseudonyms were given to research participants when quoting from interview data, and references to town or sites that might lead to personal identification were removed.

E. Description of Lync 2010 Features

A description of the unified communications software Lync 2010, as it pertained to this study during the data collection period, is presented below to provide context for understanding the components that study participants may have had access to at the time of the data was gathered. Not every participant would have access to, or utilized, every component or feature listed.

Employing a Session Initiation Protocol (SIP) instead of traditional telephony infrastructure, Voice over Internet Protocol (VoIP) enables communication by telephone over an Internet Protocol (IP) network, to integrate voice communications features like email, IM, voicemail/unified messaging, calendar, and conferencing. Utilizing VoIP technology and a single interface consistent across different devices, like PCs and mobile devices, Lync Server 2010 offers a number of communication and collaboration capabilities to organizations of any size

(Microsoft, 2011; North, 2010). At the time this study was undertaken, the mobility feature of Lync, whereby users can access the system from a mobile phone, was not employed. The following features would have been available to the majority of users who participated in the study:

Click to communicate. With one click, from any Microsoft program, users can rapidly begin communicating with one or more contacts in a variety of ways (IM, email, audio conference, etc.), just by clicking on a user's contact card. Click-to-communicate features are predicted to increase user adoption through their ease of use.

Contact, rich presence, and activity feed information. Integrating with the enterprise Active Directory, employee information is provided in a Lync contact card which can be personalized with a photo or image. A user can organize or group their contacts for faster communication. Lync's rich presence feature integrates with Microsoft's Office calendar to provide a visual notification of a user's availability status. This type of presence feature is considered "the magic glue that binds unified communications" (Bradley & Shah, 2010, p. 275). Knowing the status of a contact enables users to quickly determine the best way to contact them. Presence status appears next to a contact's name as text and a colored circle, indicating if they are in a call, a meeting, will be right back, busy, away, off work, or not to be disturbed. Employees can also post brief personal information or interests to an activity feed bar within their contact card, which adds "context and fun to the communications platform" (North, 2010, p. 20)

Instant Messaging (IM). Users send and receive one-to-one, one-to-many, and group text messages in real time over the corporate network. Within an IM, a user can start a conversation with one or more people, embed files, pictures and links, bring others into the conversation, mark

conversations as important, and make messages more expressive or personal by changing font size and color, and adding emoticons.

Online meetings, desktop, and application sharing. Online meetings and collaboration sessions, defined as conferences, can be automatically scheduled and joined from within Microsoft Outlook's calendar. During a conference, participants can IM, see and collaborate on a whiteboard, Windows screen, or a specific application like Word, Excel or PowerPoint, adding text, drawing or graphical annotations. A polling feature allows meeting presenters to organize polls for participant voting and sharing results. Additional participants can be invited to join at any time during a conference.

Web conferencing. Online conferences can be conducted with video, further enhancing communication richness closer to a face-to-face experience. Web conferences can be recorded and shared for viewing at a later time, extending their value.

V. PART A ONLINE SURVEY FINDINGS

Responses to the online survey are first presented demographically, to get a sense of who in AHS is telecommuting, followed by responses related to personal aspects of telecommuting such as benefits, concerns, and the attitudes and perceptions of respondents. Finally, results from the technology-related aspects of telecommuting are described.

As stated earlier, 716 employees linked to the survey following the email invitation. It is assumed not every respondent who accessed the survey then participated, because the first question asked for the number of hours worked from home to ensure eligibility criteria. Data from 88 incomplete surveys were not included. Six completed surveys were not included due to ineligibility. A total of 419 completed surveys were validated and included for analysis.

A. Who is Working from Home in AHS

To gain an understanding of the study population, participants were asked questions related to their experience working from home, how they began this new work experience, their role, and demographic data like age, gender, and location.

The typical AHS telecommuter who responded to this online survey is female, between the ages of 40 – 50, in a full-time leadership role, and located in a large city - Calgary or Edmonton. She requested to work from home, and has worked an average of 15 – 20 hours each week from home for more than two years.

More than twice as many women than men completed the survey. Seventy-three percent of all telecommuters who responded to the survey are age 40 and over. Most telecommuters found it easy to begin working from home, even though they were not provided with support or guidance. Nearly all (91 percent) are full time employees, and 74 percent have worked from home more than one year. Only 5 respondents reported providing direct patient care.

Responses indicated in the 12 tables below provide a portrait of AHS telecommuters working from home at least 15 hours each week:

Q: On average, how many hours per week do you spend working from your home?
NOTE: If you work less than 15 hours per week from home, please do not complete the survey.

	Response Total	Response Percent
15 - 20 hours	174	42%
21 - 30 hours	89	21%
31 - 40 hours	124	30%
More than 40 hours	31	7%
Total Respondents	418	100%
(skipped this question)	1	

Figure 3. Hours per week spent working from home.

Q: How long have you been working from home as an AHS employee?

	Response Total	Response Percent
Less than 3 months	15	4%
3 - 6 months	28	7%
7 - 12 months	64	15%
1 - 2 years	148	35%
More than 2 years	162	39%
Total Respondents	417	100%
(skipped this question)	2	

Figure 4. Length of time working from home as an AHS employee.

Q: How did you start working from home?

	Response Total	Response Percent
I myself made the request to work from home	246	61%
I was asked to consider working from home by my manager or someone in AHS	155	39%
Total Respondents	401	100%
(skipped this question)	18	

Figure 5. How employees started working from home.

Q: Did someone provide you with guidelines, processes, or policies for interacting and communicating virtually within AHS?

	Response Total	Response Percent
Yes	156	37%
No	263	63%
Total Respondents	419	

Figure 6. Guidelines, processes or policies provided.

Q: How easy or difficult was it for you to begin working from home?

	Response Total	Response Percent
Very easy	156	37%
Easy	193	46%
No opinion	18	4%
Difficult	48	11%
Very Difficult	4	1%
Total Respondents	419	100%

Figure 7. How easy or difficult it was to begin working from home.

Q: What is your Full Time Equivalent (FTE) status?

	Response Total	Response Percent
Full time employee	381	91%
Part time employee	36	9%
Total Respondents	417	100%
(skipped this question)		2

Figure 8. Full-time or part-time employment status.

Q: What is your role with AHS? (please check all that apply)

	Response Total	Response Percent
Leadership (Executive, Director, Manager)	97	23%
Administrative Support (Clerical, Analyst, Specialist, etc.)	45	11%
Out of Scope	248	59%
In Scope	28	7%
Operations (indirect patient care, facility support, etc.)	25	6%
Clinical (direct patient care)	5	1%
Information Management and Technology Services (IMTS) department	138	33%
Other, please specify	61	15%
Total Respondents	419	

Figure 9. Role in AHS.

An open text box for participants to add additional roles revealed a wide variety of roles, and levels of management and leadership from the majority of AHS departments.

Q: What is your gender?

	Response Total	Response Percent
Female	294	70%
Male	124	30%
Total Respondents	418	100%
(skipped this question)		1

Figure 10. Gender.

Q: What is your age?

	Response Total	Response Percent
18 - 28	13	3%
29 - 39	101	24%
40 - 50	162	39%
51 - 61	128	31%
62 or older	13	3%
Total Respondents	417	100%
(skipped this question)		2

Figure 11. Age.

Q: Where do you work from home?

	Response Total	Response Percent
Large City - Calgary or Edmonton	269	64%
Small City or Town	103	25%
Rural or Remote Location	46	11%
Total Respondents	418	100%
(skipped this question)		1

Figure 12. Home working location.

Q: In addition to working from home 15 or more hours each week, please identify any other locations from which you perform your work, and the amount of time spent at each, during a typical work week.

	Less than 1 day per week	1 - 2 days per week	3 or more days per week	Not applicable	Response Total
Personal or shared space at AHS worksite	23.0% (94)	33.3% (136)	25.7% (105)	17.9% (73)	408
Mobile AHS worksite*	21.8% (66)	9.9% (30)	2.3% (7)	66.0% (200)	303
Non-AHS mobile worksite or client site**	19.4% (57)	3.7% (11)	1.0% (3)	75.9% (223)	294
				Total Respondents	414
				(skipped this question)	5
*Mobile AHS worksite refers to workstations set aside at different AHS sites and facilities for anyone from elsewhere to work from.					
**Non-AHS mobile worksite or client site refers to workstations utilized by AHS employees at a client, or vendor site outside the organization, for meetings, collaboration, or onsite management.					

Figure 13. Other locations where work is performed.

Q: How many Kilometres (one way) do you need to travel to your closest AHS worksite?

	Response Total	Response Percent
1 - 5 KM	55	13%
6 - 10 KM	97	23%
11 - 15 KM	77	18%
16 - 20 KM	50	12%
21 - 30 KM	39	9%
31 or more KM	100	24%
Total Respondents	418	100%
(skipped this question)		1

Figure 14. Kilometres to closest AHS worksite.

B. Personal Aspects of Telecommuting

1. Benefits

All respondents (419) answered the question asking for the benefits they have realized since they began working from home. The four top personal benefits experienced by telecommuters in AHS are: less commuting and associated costs (92 percent), fewer disruptions

(90 percent), increased productivity (79 percent), and a more flexible work schedule (75 percent). Other benefits realized are presented in the table below:

Q: Which of the following benefits have you realized since you began working from home? (Check all that apply, or NO benefits)

	Response Total	Response Percent
Little or no disruption of work from environment (noise, interruptions, etc.)	378	90%
Increased productivity	331	79%
Increased autonomy/independence	228	54%
More flexible work schedule	316	75%
Fewer missed days of work	251	60%
Less commuting and associated costs	386	92%
More control over my life	283	68%
More time to spend with my family	236	56%
NO personal benefits realized (CHECK NO OTHER SELECTIONS ABOVE)	1	0%
Total Respondents	419	

Figure 15. Benefits realized since working from home.

Respondents could add to an open text box any additional benefits they have realized. Additional benefits were provided by164 respondents (39 percent). Many comments were similar to the benefits presented in the question table; they related to flexibility, reduced commuting and associated costs, quieter environment with fewer disruptions and distractions, and work-life balance.

The privacy of a home workspace makes it easier to conduct private phone conversations, and to maintain confidentiality, particularly related to sensitive patient data.

A significant number of respondents cited health benefits, including a reduction in stress; improved energy, wellbeing, and happiness; improved nutrition, exercise, sleep, and reduced sick time; better control over chronic illnesses; and the ability to continue working following an injury, or to care for sick family members.

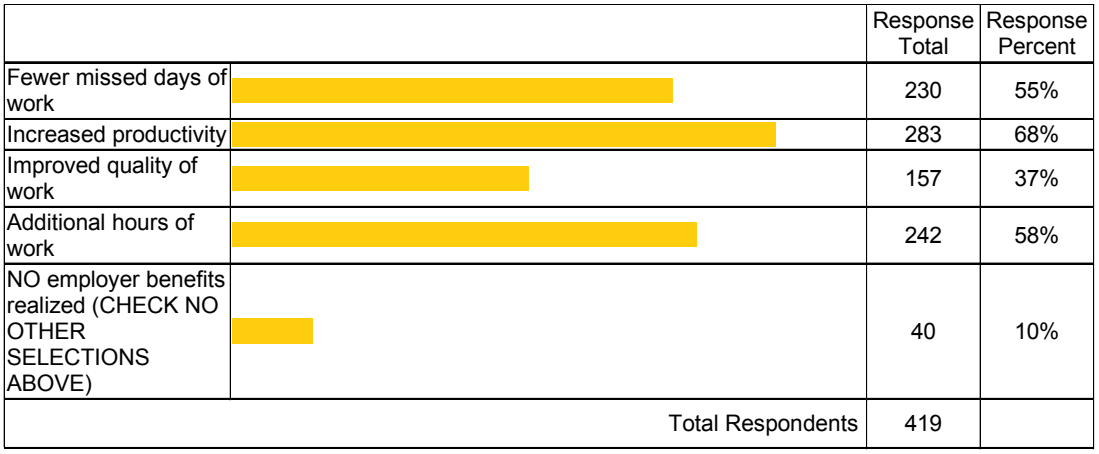
Increased engagement with colleagues and the organization was another benefit added. Respondents say morale has improved, and that they feel trusted and valued by their managers and the organization. Higher job satisfaction and intentions to remain working with AHS were reported.

The following quotes exemplify the additional comments made by respondents:

> Significant reduction in overall personal stress, controlled eating habits contributed to small weight loss, and greatly improved restorative sleep. While working in my office location, the local culture was very flexible, but I was not taking breaks away from my workspace. Working from home where there are no distractions during my work day I have had to train myself to regularly look away from my monitor and workspace for 2 - 3 minutes at least once an hour; I now use Lync conference time to stand by my workstation and stretch and flex which I did not do in my office. My general health has improved and I now am able to enjoy regular exercise in the after work hours.

> I feel supported by the organization. This goes deeper than a work/life balance and extends to being valued by my organization and my manager. I know that with this arrangement comes a level of trust. Their trust in me, their support of my arrangement and their willingness to take a risk with a new way of conducting business makes AHS an organization I, in turn, value.

Q: Which of the following benefits do you feel your manager and/or AHS have realized since you Began working from home? (Check all that apply, or NO benefits)



	Response Total	Response Percent
Fewer missed days of work	230	55%
Increased productivity	283	68%
Improved quality of work	157	37%
Additional hours of work	242	58%
NO employer benefits realized (CHECK NO OTHER SELECTIONS ABOVE)	40	10%
Total Respondents	419	

Figure 16. Benefits realized by manager or AHS.

When asked about the benefits they feel their manager and/or AHS have realized since they began working from home, more than half of respondents identified productivity, followed by additional hours of work, and fewer missed days. However, only 37 percent feel the quality of their work has improved while working at home.

Respondents could add additional key benefits they feel their manager and/or AHS have realized since they began working from home. Of the 140 respondents (33 percent) who responded, many repeated benefits similar to those in the question table, such as productivity, and additional hours of work. Twenty comments related directly to flexibility and responsiveness. Comments indicate respondents feel that managers and the organization also benefit from healthier and happier employees. Twenty comments related to increased morale and job satisfaction, and 15 to health. The following are two participant comments that represent and summarize the responses:

> Hours can be flexed to benefit AHS without use of overtime. Trusting and caring environment that as long as work is done well and on time. After working faithfully and hard for over 25 years within healthcare, it is for once nice to be respected and trusted as a worker that can be relied on without micromanaging.

> I am a happier, more positive, organized, creative, and higher functioning employee. I feel more connected to my work, with less interruptions, have more time in the day to meet my timelines and take on more work and have a greater work-life balance.

2. Concerns, drawbacks or obstacles encountered by telecommuters

Working more or too much, and personal and professional isolation are the major drawbacks that telecommuters in AHS are presently experiencing. But of note is the fact that of the 419 respondents, 33 percent indicated they experience no concerns, drawbacks or obstacles while working from home. The following table indicates the current experiences of participants related to concerns, drawbacks or obstacles:

Q: Which of the following concerns, drawbacks or obstacles are you presently experiencing while working from home? (Check all that apply, or NO concerns)

	Response Total	Response Percent
Isolation	137	33%
Boredom	17	4%
Procrastination or lack of motivation	29	7%
Work more or too much	166	40%
Decreased autonomy/independence	1	0%
Household or family distractions or conflicts	30	7%
Concerned I am "out of sight, out of mind" from my manager/supervisor which may impact my ability to be promoted or advanced	111	26%
Concerned I may receive less job training or fewer learning opportunities	59	14%
NO concerns, drawbacks or obstacles experienced while working from home (CHECK NO OTHER SELECTIONS ABOVE)	138	33%
Total Respondents	419	

Figure 17. Concerns or drawbacks experienced while working from home.

Respondents could add additional concerns they are currently experiencing. There were 168 responses for additional concerns, similar to the number of responses given for benefits (164). Many of the comments added emphasis to the concerns from the question table, such as isolation, and working more or too much.

Additional concerns or drawbacks not listed as choices in the question related to issues around team communication, networking, and relationships; informal peer learning; technology such as connectivity, tools/peripherals, reliability, support, and specifically Lync audio; and colleague and manager attitudes and perceptions, or "negative optics" of telecommuting. The following comments further explain some concerns expressed by respondents:

> With half of our team now working from home we notice the communication within our team (sharing of information) has suffered. Previously we often overheard discussions and could ensure ALL the team heard the discussion/decisions at same time.
>
> The one difficulty is determining and then expressing to my director when I am too ill to even work from home. There are times when I do work from home because I am too ill to come into the office, but sometimes that option creates the expectation that you should always be able to do at least some work from home.
>
> The loss of the over the wall conversations really negatively impacted my ability to learn a new task recently when I switched teams. There's a lot of informal peer learning that takes a conscious and deliberate effort to replace when bringing in new staff or transitioning staff into new roles.
>
> There is the danger of becoming isolated - an effort must be made to reach out to your manager and peers on a regular basis. I have developed a routine where I call my manager once a week and my peers about every two weeks to stay connected. A brief conversation about work and life effectively maintains the connection. I need to be very cognizant of my start/end time otherwise I do have a tendency to begin work earlier over time and end it later in the day. I'm not concerned that the out of sight, out of mind is a problem for my manager, but I do believe it is a problem with those individuals further up the management chain….Prime AHS leadership positions are located onsite in offices in either Edmonton or Calgary - you must be located in either of these cities. This significantly reduces the opportunities for those…who live in rural communities and limits the ability of leadership to understand all aspects of AHS, including the benefits and challenges of working from home regularly.

3. Perceived changes to productivity, efficiency, quality of work, and quality of life

Productivity is perceived by 82 percent of respondents to have increased, somewhat, or significantly, since they began telecommuting. The perception of increased efficiency is slightly lower at 77 percent. In contrast to those perceived increases, only 29 percent report seeing a change in the quality of work they do while working from home.

However, nearly all respondents (90 percent) find their quality of life has somewhat, or significantly improved, since they began working from home.

The following four tables detail participant responses related to productivity, efficiency, quality of work, and quality of life:

Q: How has your productivity (amount of work you are able to complete each day) changed during the days you work from home?

	Response Total	Response Percent
Significantly increased	167	40%
Somewhat increased	178	42%
No change	58	14%
Somewhat decreased	9	2%
Significantly decreased	3	1%
Do not know	4	1%
Total Respondents	419	100%

Figure 18. Change in productivity.

Q: How has your efficiency (time and effort required to complete work) changed during the days you work from home?

	Response Total	Response Percent
Significantly increased	148	35%
Somewhat increased	175	42%
No change	71	17%
Somewhat decreased	18	4%
Significantly decreased	4	1%
Do not know	3	1%
Total Respondents	419	100%

Figure 19. Change in efficiency.

Q: What changes have you or your manager observed with your quality of work since you began working from home?

	Response Total	Response Percent
Significantly improved	33	8%
Somewhat improved	86	21%
No change	248	59%
Somewhat worse	1	0%
Significantly worse	0	0%
Do not know	49	12%
Total Respondents	417	100%
(skipped this question)		2

Figure 20. Change observed with quality of work.

Q: What changes have you experienced with your quality of life since you began working from home?

	Response Total	Response Percent
Significantly improved	241	58%
Somewhat improved	135	32%
No change	24	6%
Somewhat worse	13	3%
Significantly worse	3	1%
Do not know	3	1%
Total Respondents	419	100%

Figure 21. Change experienced with quality of life.

4. Overall satisfaction with working from home

Nearly every respondent, 95 percent, reports being satisfied, or very satisfied with working from home as indicated below.

Q: Overall, how satisfied are you with working from home?

	Response Total	Response Percent
Very Satisfied	295	70%
Satisfied	103	25%
Neutral	18	4%
Dissatisfied	2	0%
Very Dissatisfied	1	0%
Total Respondents	419	100%

Figure 22. Overall satisfaction working from home.

C. Technological Aspects of Telecommuting

1. How Lync is used by telecommuters

The following four tables represent responses given by participants about their use of Lync within and outside the organization:

Q: How long have you been using Lync?

	Response Total	Response Percent
6 months or less	27	6%
7 - 12 months	33	8%
1 - 2 years	154	37%
More than 2 years	205	49%
Total Respondents	419	100%

Figure 23. Length of time using Lync.

When asked how long they have been using Lync, nearly half of all respondents (49 percent) report using Lync for more than two years.

Q: Is everyone you communicate with in AHS enabled with Lync?

	Response Total	Response Percent
Yes	207	49%
No	212	51%
Total Respondents	419	100%

Figure 24. Is everyone communicated with enabled with Lync.

More than half of all respondents communicate with others in the organization who are not enabled with Lync. Respondents who communicate with others in AHS who do not have Lync were asked to describe ways their work is affected by all of their contacts not being enabled with Lync. Of the 212 Lync users who communicate with others not enabled, 201 provided a text response. Most responses (84) focused on the fact that work is affected by the inability to share screens and programs; that time delays result in using other means to communicate and collaborate; and the inability see the presence status of contacts affects efficiency. Communication with contacts who do not have Lync is performed by phone and email. In some instances meeting face to face would be required to review documents, increasing travel. Other effects include feelings of alienation by those who do not have Lync, and decreased learning opportunities, as expressed in the comment below:

> Attending to the 'phone in' needs of the minority can be awkward and often leaves them feeling out of place. Them not having Lync creates additional work for me, having to ensure phone numbers and materials are sent ahead of time. I also have to compensate for their audio participation only, often describing what others are seeing or doing (whiteboard, polling, etc). Others not having Lync also decreases my efficiency in not

being able to see information like their presence or next availability. Not being able to IM people forces me to use less efficient mechanisms like phone and email.

Nineteen participants feel that even though phoning and email are not as timely as using Lync, they are effective, and so these participants report no negative effects of communicating with others who do not have Lync.

Q: Do you use Lync to communicate or collaborate with one or more external clients, partners or vendors?

	Response Total	Response Percent
Yes	213	51%
No	205	49%
Total Respondents		418
(skipped this question)		1

Figure 25. Use of Lync to communicate with external clients, partners or vendors.

About half (51 percent) of respondents are using Lync to communicate and collaborate outside the organization.

Q: On average, how often do you perform the following activities using Lync's various components?

	Every day	A few times each week	A few times each month	Occasionally	Never/ Unaware/ No Access	Response Total
Check the Presence of a contact to determine the best way to connect	76.8% (321)	11.5% (48)	2.6% (11)	5.5% (22)	3.8% (16)	418
Initiate an Instant Message (IM) conversation with two or more contacts	58.9% (245)	19.5% (81)	7.5% (31)	9.1% (38)	5.1% (21)	416
Send a file during an IM conversation	8.2% (34)	17.4% (72)	21.1% (87)	33.4% (138)	19.9% (82)	413
Schedule an online meeting	34.1% (142)	35.3% (147)	15.1% (63)	8.6% (36)	6.9% (29)	417
Share desktop or program (Word, Excel, etc.) during an online meeting	28.2% (118)	40.0% (167)	16.1% (69)	11.9% (50)	3.4% (14)	418
Give or take control during an online meeting	15.1% (62)	31.3% (129)	22.1% (91)	22.1% (91)	9.5% (39)	412
Video - Initiate or participate	2.9% (12)	7.5% (31)	9.7% (40)	30.9% (127)	48.9% (201)	411
Video - Record or view/play back	1.5% (6)	2.9% (12)	7.3% (30)	28.4% (117)	59.9% (247)	412
Send an IM or start a sharing session from Microsoft Word, Excel, or PowerPoint	13.6% (56)	12.9% (53)	10.9% (45)	14.8% (61)	47.8% (197)	412
Share a Whiteboard	1.9% (8)	4.1% (17)	9.9% (41)	26.0% (108)	58.2% (242)	416
Initiate a Poll	1.5% (6)	1.5% (6)	6.3% (26)	19.8% (82)	71.1% (295)	415
					Total Respondents	419

Figure 26. Lync components frequency of use.

Participants were asked to indicate how often they used Lync's various components. Checking a user's presence is the component used most often, every day or a few times each week; followed by Instant Messaging; scheduling online meetings; and sharing desktops or programs.

2. User opinions about Lync's components

The following four tables show survey results of questions about participant opinions of the ability, quality, and performance of Lync components:

Q: Considering your experience using Lync's various components (presence, IM, audio, online meetings, program sharing, poll, video, record, etc.) to communicate and collaborate, what is your overall opinion about Lync's capabilities to foster the following?

	Excellent	Good	Satisfactory	Poor	Unacceptable	Not applicable	Response Total
Get immediate feedback	56.4% (234)	35.0% (145)	7.0% (29)	0.24% (1)	0% (0)	1.5% (6)	415
Find/gather the right information quickly	39.9% (165)	43.0% (178)	13.3% (55)	0.97% (4)	0.2% (1)	2.7% (11)	414
Share information in a variety of ways	48.7% (201)	40.9% (169)	8.0% (33)	0.48% (2)	0% (0)	1.9% (8)	413
Brainstorm/share ideas	41.0% (170)	41.7% (173)	14.0% (58)	1.5% (6)	0% (0)	1.9% (8)	415
Reach agreement/consensus	29.0% (120)	43.5% (180)	20.8% (86)	1.0% (4)	0.5% (2)	5.3% (22)	414
Make decisions	29.3% (121)	43.3% (179)	19.9% (82)	1.9% (8)	0.5% (2)	5.1% (21)	413
Focus on a task	33.1% (137)	43.2% (181)	16.2% (67)	1.9% (8)	0.5% (2)	4.6% (19)	414
Transmit knowledge	38.1% (157)	48.3% (199)	10.7% (44)	0.7% (3)	0.2% (1)	1.9% (8)	412
Build connections/network	37.2% (154)	39.1% (162)	17.4% (72)	2.9% (12)	0% (0)	3.4% (14)	414
Work well with others	41.8% (172)	44.7% (184)	10.4% (43)	1.0% (4)	0.2% (1)	1.9% (8)	412
Actively participate	42.0% (174)	42.4% (176)	12.5% (52)	1.5% (6)	0.2% (1)	1.5% (6)	415
Equally contribute	36.2% (150)	40.8% (169)	18.4% (76)	2.2% (9)	0.2% (1)	2.2% (9)	414
Speak naturally	34.4% (142)	41.9% (173)	17.7% (73)	3.2% (13)	0.7% (3)	2.2% (9)	413
Foster trust	25.4% (105)	39.9% (165)	24.4% (101)	3.1% (13)	0.2% (1)	7.0% (29)	414
Socialize	27.0% (112)	41.2% (171)	22.8% (92)	4.1% (17)	0% (0)	5.5% (23)	415
						Total Respondents	417
						(skipped this question)	2

Figure 27. Opinion of Lync to foster various communication needs.

When asked their opinion about how well they feel Lync's components are able to foster typical work tasks or needs, participants rated seven of them highly, as either Excellent or Good: share information (90 percent); get immediate feedback (87 percent); work well with others (87 percent); transmit knowledge (86 percent); actively participate (84 percent); find information quickly (83 percent); and brainstorm ideas (83 percent).

Q: Please rate the quality of the following Lync components when working from home.

	Excellent	Good	Satisfactory	Poor	Unacceptable	Haven't used/ No access	Response Total
Contacts / Presence	55.7% (231)	32.5% (135)	8.4% (35)	1.0% (4)	0.2% (1)	2.2% (9)	415
Instant Messaging (IM)	61.3% (255)	28.9% (120)	6.3% (26)	0.5% (2)	0.2% (1)	2.9% (12)	416
Audio	15.2% (63)	24.6% (102)	30.6% (127)	18.6% (77)	6.5% (27)	4.6% (19)	415
Desktop / Program Sharing	25.4% (106)	38.8% (162)	23.4% (98)	6.0% (25)	2.6% (11)	3.8% (16)	418
Video	7.5% (31)	11.8% (49)	16.0% (66)	6.8% (28)	4.4% (18)	53.6% (222)	414
Video Recording	5.1% (21)	8.8% (36)	12.3% (51)	2.9% (12)	2.7% (11)	68.4% (284)	415
Whiteboard	7.3% (30)	15.0% (62)	14.7% (61)	2.4% (10)	1.0% (4)	59.7% (247)	414
Polling Participants	7.0% (29)	14.0% (58)	10.2% (42)	1.2% (5)	0.2% (1)	67.3% (278)	413
						Total Respondents	418
						(skipped this question)	1

Figure 28. Quality of Lync components.

Considering the quality of Lync components when working from home, respondents rated Instant Messaging most often as Excellent, followed by presence, and desktop/program sharing.

Q: Where do you prefer to get help with Lync when working from home? From the list of resources below, please rank only the one(s) you use from home, with the resource you access most frequently as 1.

	Ranking Average
Trial and error on my own	1.41
Assistance from other users	2.3
AHS Help/Service Desk	4.02
Web resources (Microsoft or other websites)	4.03
Resources on Insite	4.16
AHS Unified Communications Services (UCS) team	4.66
Total Respondents	400
(skipped this question)	19

Figure 29. Preference for getting help with Lync.

When asked where they prefer to get help with Lync, respondents indicate they mostly troubleshoot by trial and error, and then ask another user for assistance, rather than looking for resources within AHS or Microsoft online. These findings are consistent with a previous Lync user survey of all Lync users conducted in 2012 that asked the same question.

Q: How would you rate Lync's overall performance while working from home?

	Response Total	Response Percent
Excellent	96	23%
Good	204	49%
Satisfactory	84	20%
Poor	26	6%
Unacceptable	6	1%
Total Respondents	416	100%
(skipped this question)		3

Figure 30. Lync's overall performance from home.

Forty-nine percent of all respondents (204) rated Lync's overall performance as Good, and another 23 percent rated it as Excellent.

Respondents, who rated Lync's overall performance as Poor, or Unacceptable, while working from home, were asked to explain why in an open-text box. Of the 31 responses provided, 24 participants, or 77 percent, report problems with their audio. To mitigate audio issues, users are connecting to Lync online meetings to view presentations and participate in program sharing, but dialling into the call with a mobile phone or landline phone to hear and speak.

Eight respondents reported issues when sharing programs. Other reasons for dissatisfaction include inconsistent or unreliable performance, issues caused by outdated programs, slowness, and lack of access to components and support.

3. How telecommuters connect online

Factors like computer quality, internet service, and virtual private network (VPN) providers can all play a role in a successful Lync experience. Reliable internet connection, sufficient bandwidth, and a suitable audio headset and web camera are critical for utilizing most of Lync's features.

Participants were asked a series of questions related to the age of their computer or laptop, their internet service provider, Virtual Private Network (VPN), and preferred internet connection. Results are provided in the following four tables:

Q: How old is your AHS computer or laptop?

	Response Total	Response Percent
0 - 1 year	70	17%
2 - 3 years	185	44%
Greater than 3 years	101	24%
Do not know	62	15%
Total Respondents	418	100%
(skipped this question)		1

Figure 31. Age of AHS computer or laptop.

Q. When working from home, who is your service provider?

	Response Total	Response Percent
Bell	4	1%
Rogers	11	3%
Shaw	191	46%
Telus	169	41%
Xplornet	7	2%
I do not know	4	1%
Other, please specify	31	7%
Total Respondents	417	100%
(skipped this question)		2

Figure 32. Internet service provider at home.

Q. What do you use for your primary Virtual Private Network (VPN) access?

	Response Total	Response Percent
Citrix	28	7%
Fortigate	13	3%
NetMotion VPN	237	57%
Nortel VPN	82	20%
I do not know	28	7%
Other, please specify	30	7%
Total Respondents	418	100%
(skipped this question)		1

Figure 33. Primary Virtual Private Network (VPN).

Five respondents added that they are not using a VPN. Using a combination of VPN services, or other methods to access files remotely, was given by 30 respondents.

Q: What type of internet connection do you mostly use when working from home?

	Response Total	Response Percent
Wired	168	40%
Wireless	251	60%
Total Respondents	419	100%

Figure 34. Preferred internet connection from home.

Interestingly, neither a single internet provider, geographical location, nor wired/wireless connection appear to be factors positively correlated with poor Lync performance, as the following survey tables indicate below. Of the 415 respondents who rated Lync's performance, 30 rated Lync performance as Poor, or Unacceptable, while working from home (Figure 30 above). Of those 30, Shaw provides internet service to 17, and TELUS provides internet service to 12. Explornet and Abnet were each named once by those dissatisfied with Lync performance.

Twenty-one live in a large city, nine in a small city, and only two report poor or unacceptable Lync performance from rural locations. Approximately half of these dissatisfied users are using wireless internet connection, while half are using a wired connection.

VI. PART B INTERVIEW FINDINGS

A. Description of Interview Participants

As clarified in the Methods section, twelve employees from 164 volunteers who completed the online survey were invited to participate in an interview. All invitations were accepted except for one employee who declined due to a medical reason.

Interviews were conducted remotely, using Lync's videoconference component, with participants in their homes. The Researcher conducted the interviews from a private AHS office to ensure optimum privacy and online connectivity. Three participants were unable to participate using their video, because they did not have a camera, or their camera was not working, however, these participants could see the Researcher. One participant, using her own computer and camera, could not see the Researcher, though the Researcher could see her.

To meet AHS research ethics requirements, all participants have been assigned pseudonyms for this report.

Six females and five males were interviewed. All five AHS geographic zones were represented. The interviewees held a variety of roles and accountabilities which represented well the responsibilities within provincial and operational teams throughout the province.

Because AHS does not have a formal telecommuting program in place, seven employees requested or negotiated their working from home arrangements. Three were presented with the opportunity to work from home by their manager, and one employee, in a management role with remote access to resources, has had the ability to work from home since 2006.

Eight participants work from home an average of two or three days each week based on their schedules. Back-to-back teleconferences, or the need to focus on a specific task, are motivations that typically determine which days are worked from home. One participant works

from home full time. Two work from home 80 to 90 percent of the time. Seven participants have worked from home two years or more. The shortest regular telecommuting time among the interview participants was at least three days a week, for three months prior to the interview.

The interviews commenced with broad questions about telecommuting: How participants began working from home, and for how long; the benefits they hoped to realize; any concerns, and how they overcame them, and; how they feel about working from home. Then they were asked about the types of tasks they do that make it easy or difficult to work from home; their need to find and share information, collaborate, brainstorm, and share ideas, make decisions, and interact socially. Participants provided examples of situations where Lync enabled them to complete a task more efficiently or effectively, and situations where Lync could hinder the outcome. Finally, they were asked what could improve working at home for them, how important they feel it is for employees that the organization implements a formal alternative workplace arrangement program, and how they felt Lync service could be improved. All participants were given an opportunity to share any other information relevant to the topics under study.

1. How interview participants began working from home

Interview participants cited issues with their AHS onsite workspace, or an organizational shortage of onsite workspaces, as the main reason they are working from home. Onsite workspace issues include a lack of privacy for confidential communication, frequent interruptions, and distractions.

Others began working from home to avoid commuting and its associated costs, or to support work-life balance related to family obligations. Telecommuting provides the flexibility for employees to manage the needs of children, grandchildren, spouses, and aging

parents, and respondents reported being able to keep up their work attending to these family responsibilities.

Koreen, who must frequently assist clinical application users with troubleshooting, describes her cubicle at her AHS office workspace:

> The new place that we moved into is the cubicle style and while we were promised all the stuff to make it deaden the sound so it's not going to be so noisy, it's still pretty noisy. Where my cubicle is located it's at a T intersection between…the bathroom and the coffee place and the photocopier. So you can imagine that's a fairly common place for people to run into other people and they often stand and chat just outside my cubicle. Particularly if I'm on a Lync meeting it can be really difficult to hear, or I'm trying to speak on the Lync and we're hearing the laughing that's coming from just on the other side of the cubicle. So that's a big bonus! [said ironically]. Also, in our cubicles where we're located is right in the middle of a large space so there's no natural light that comes in there at all. I'm very lucky that where I'm able to work - what I call my home office - has lots and lots of natural light so I appreciate that.

Mark, a busy senior director, shared a desktop view from his computer of his calendar schedule with the Researcher during their online interview. Having worked in both an office and a shared environment, Mark finds particular roles and job tasks are not conducive to a cubicle environment:

> My calendar is essentially back-to-back meetings. These meetings are…throughout the province on highly confidential, highly political multimillion dollar proposed projects. These are video… My day is very structured. For me to actually logistically go from a cubicle space into a meeting room - this day for example – if all these are calls, or if I'm chairing the meeting or if I'm doing the actual calls, I need to go into a secured meeting room. What would happen is I'd be in a meeting room all day.

Long sold on the personal benefits of telecommuting, Lucy for more than eight years has chosen roles that accommodate her desire for a work from home arrangement. Since joining AHS three years ago, she has been working from home half time for about two years.

> I made no secret that I was interested in a work from home option, so they knew right away that I would be interested, and my manager advocated for that. My department…as a whole is not very supportive of work from home options and so I have had to justify it a couple of times.

B. Benefits

Interview participants largely reiterated the benefits identified in the online survey related to commuting and associated costs, flexibility, privacy, productivity, and health.

The benefit of flexibility is a frequently repeated theme. The ability to adjust their work and home schedules gives participants more time, which they use more effectively and productively for work tasks. Commuting times range from five minutes to 30 minutes for participants, but even those employees who live close to their workplace say they do not like commuting, due to parking issues, traffic, and associated commuting costs. One participant commutes more than 1.5 hours each way to his AHS worksite. He often drives to the city on a Monday morning, stays over for a couple of nights, and returns home on Wednesday night where he will work from home the remainder of the week. Other times, he does commute back and forth every day.

Health benefits, such as reduced stress, fewer sick days, improved nutrition, exercise, and increased work life balance, were often reported to relate to productivity. "I find I'm a much more whole person working from home," summed up one participant.

Following are examples of participant responses about the benefits they have achieved working from home:

> [Telecommuting] allowed me to take a position that I normally would have had to decline because I had the option to work part time out of home…The advantage is definitely less distractions. It's really good for what I call thinking time where you set aside time to think through issues, to review briefing notes, try to make decisions, try to strategize, plan. So getting out of the office gives you that time to do some really clear thinking and be productive that way.

> It really reduces my stress. I am a much happier, more productive, more creative worker in a quiet space.

C. Concerns

Participants were asked to share concerns they had when considering to work from home, and how they overcame them. Concerns fell into three general areas: 1) distractions and interruptions; 2) isolation related to missing colleagues, and lack of presence or visibility in the office; and 3) home must function like work, or a "seamless experience" of working between home and the worksite.

1. Distractions and interruptions

When they first began working from home, three participants had concerns about their discipline and focus, or being "lazy." Although interruptions and distractions by coworkers are one of the main reasons employees choose to work from home, interruptions by spouses, children, and pets were reported by homeworkers. Every participant who mentioned distractions and interruptions has found effective ways to manage them. They feel that, because distractions and interruptions will always be present at the worksite and at home, they are not a significant hindrance, but something to be worked around.

Wanda found she had to learn how to manage her time better when she started working from home, and so did her team, who all work from home one to three days each week. They met the challenge together as a team, by setting goals together as a group to overcome productivity concerns. They use Lync to check in with each other several times per day to see if they are on track or might need help with something. They also work closely with their manager who also works from home or from other locations in the province.

Even if they do not currently have a dedicated home office, more than half of the interview participants believe a dedicated, ergonomically configured home office with door is important for focus and keeping interruptions and distractions at bay while working from home.

Four homeworkers find they are able to work effectively from kitchens, dining rooms, bedrooms or other flexible spaces in their homes. Rick has worked from his dining room table and a bedroom, but now prefers to use his home office. He added an extra keyboard, mouse, monitor, wireless headset, and dedicated second phone line to the space, and finds it "very comfortable and relaxing." Marley explained why her "bare and clean" kitchen offers fewer distractions than her home office:

> My home office tends to be my Sears bill and my Chatelaine magazine subscription and that again is too distracting. I'm like a fruit fly gnat…I've got quilting stuff that I like to do…I'm closer to my home computer which has my Facebook…I *know* that would not be good!

2. Isolation

Similar to the anxieties revealed in the survey data, interview participants had concerns with feeling isolated, missing out on social interactions with co-workers, and not having a visible presence in the office. Two participants found they were getting less exercise at home, because they are not walking as far for food and drink, or to interact with colleagues.

Koreen and her team make sure to go out for lunch together once a month to keep "that more social thing, team cohesion, going." Four participants reported making an effort to spend time on site, either to connect with colleagues, or because "having a presence is good for morale and to just remind people that you're still around." Others have been able to keep in touch with a team Facebook account, and Lync IMs or audio calls.

Mark misses "hallway conversations" which he finds can be more effective than meetings. "The ability to influence in the hallway is actually quite high, or right after a meeting." He feels spending time at his onsite workspace lessens this concern somewhat.

One participant has taken advantage of a working alone program, developed by the organization for AHS workers who may be alone in the course of their job. To manage potential

personal safety risks on the days she is working alone from home, this telecommuter developed a plan to check in with a team members when she begins, and checks out at the end of the day. If she didn't show up to an online meeting, one of her colleagues would follow up to make sure she is okay.

3. Home must function like work

When Khloe, who works from home four days each week, first began working from home two years ago, she found that working from a laptop, without access to all her files and resources, was not ideal. "For me it needed to be full functionality...It needed to be like I was at the office."

Although Khloe can work without access to a printer, several other participants have had to adjust to not having a printer at home. Four have access to administrative assistants who can print documents for them at the office, several use their home printer, and others, like Khloe, have found they can "go paperless." Wilma worried at first about not having access to a printer. "I had a printer on my left elbow in my old office, but actually now I realize that you print stuff because you have a printer there!...I just realized that I don't need to print that often."

Although the majority of participants are satisfied with their Lync performance, some have experienced inconsistency with audio and connectivity. Rick's "biggest beef" is the quality of Lync's audio from home, which he finds "very unreliable," despite working with the organization's Lync team, help desk, and his home internet provider. He uses Lync for every phone call at his AHS site, so when Lync audio fails at home, he finds "that lack of audio capability really, really, really annoying. Now I have a headset that's a dual headset that I can connect my cell phone, my house phone, and my Lync so it does all three, but still I'm picking up my cell phone and dialing rather than just clicking a button with Lync."

D. How Employees Feel About Working From Home

Participants did not hesitate when asked to report how they feel about working from home, reiterating some of the benefits they described earlier. All comments were positive, ranging in degree of enthusiasm from "It's a nice change every now and again," or, "I actually like it better than I thought," to "I love it…personally I'd be quite happy to work from home full time." Flexibility and work-life balance were mentioned again: "It's a very effective alternative. It provides you a lot of flexibility and I really feel that I can balance hours and lifestyle a lot more."

One participant shared her "philosophy" about working from home: "It is a benefit for me and shouldn't be a hardship for anyone else. And so I go to great strides to make sure that it's not a hardship or even an annoyance for other people."

E. Telecommuter Time Spent Working Outside Standard Business Hours

It has been argued that telecommuters accomplish more, not because they are getting more done in the same amount of time, but because they are working more hours (Kugelmass, 1995, p.53). Nearly all interview participants report working outside standard business hours or on weekends, but not all are putting in more time. Working additional hours appears to be closely related to employee roles with increased authority and accountabilities. Although most of these participants say they try to avoid doing computer work on the weekends, the majority of them admit to checking their mobile phones to respond to urgent or important requests, and to stay caught up. Working more hours or longer days is reported to also correspond with "what's on my plate, on a personal level as well as a home level."

Lucy, on the other hand, rarely works outside standard business hours, because that is when she is required to be available to clients and co-workers. "I have lots of meetings so there

really isn't an option for me to be working outside of regular hours. Which suits me fine. And I really don't have a challenge in turning off."

Some participants report exchanging commuting time for increased productivity. Mark, Fred, and Rick see working from home as an opportunity to start their day earlier and tackle emails and tasks that don't require meetings so they don't fall behind. This practice contrasts with participants who prefer to start their days a bit later in the mornings and then work into the evening, or flex their time during the week and catch up on weekends. Research shows personality and personal bioclocks can also play a role in telecommuter work hours (Kuglemass, 1995), so that may be a factor for the participants in this study.

F. Presence, Availability, and Access

Participants were asked how important it was to them that they have a presence in the workplace, either in person or online when working from home and physically absent from the office and co-workers one or more days each week. The majority feel having a presence in the workplace to be "important," "very important, or "critical" (their words). Most feel an online workplace presence is more important than a personal presence at an AHS site. This could be because, for many of these interviewees, their fellow team members or their managers are not co-located with them at the same site. One participant illustrates this point: "I am far away, so [others] don't have a clue. They don't know I'm at home because when they're calling me on Lync at work it doesn't say Lync at work, Lync at home. It just says Lync, right? Wherever you are is wherever you are."

1. In-person presence

Although in-person presence has less importance for teams whose members are not co-located, nearly all participants who spend time at an AHS site report planning their visits to

maximize face time with both team members and other colleagues. Lucy does find, however, that her colleagues wait until she is in the office to talk to her. Even her vice president apologizes for calling her at home, so she makes an effort to use Lync to touch base with colleagues when at home, just like she would do by walking up to their desk at the office. Because her senior manager is onsite, and has a more traditional management study, she feels it is good to be seen and involved at the office because there is a presumption that employees are disconnected or not aware of what is going on if they are not there. Having access to senior leaders for quick chats onsite is good for relationship building and is very easy to do. To maximize this benefit, Lucy has set office days and set home days so her colleagues and leaders know when to come looking for her or to set onsite meetings. And those are the times when her vice president will walk around and chat with her. It prevents "an overall impression of, oh well she's never here!"

For others, a presence in the office would not equate to seeing team members more. By using dedicated time at home to get basic tasks done, Fred is able to spend time at different sites every few weeks or once a month. It is a predetermined arrangement and he talks with his employees about expectations of him being onsite. Two other participants also emphasized that it is important to them that they communicate to staff their preferences for being reached when they are away from their AHS workspace.

2. Online presence

Lync's real time presence/availability component turns the concept of presence into technologically mediated information, or what Aaltonen and Eaton (2009) refer to as "informated presence" (p. 5). With a glance, even while working from different Microsoft Office programs, Lync's presence status provides information about a user's availability, making it easy to quickly

determine the best communication mode to make contact. Aaltonen and Eaton's research suggests that being aware of the presence of others "results in accountability for interaction, as participants are tied to a moral order knowing that everyone is aware of everyone else's acts" (p. 5). This idea was reflected in the interviews, as all participants feel that having a presence, particularly online, is important as a telecommuter. Selecting one's presence status appears to be moderated according to the user's desire to be accountable in responding to contact by other users. One participant expressed particularly well this importance of making sure she is accessible:

> It's important that… I make sure I'm accessible. I put in my calendar when I'm working from home. I make myself available whether it's through Lync, email, my cell phone, and if I need to go onsite I'll be onsite. So it's important that I'm accessible but I don't think I need to be physically present.

3. Presence etiquette

As is the case with most social behaviours, etiquette has emerged for using Lync's components, particularly the presence status feature. Lync indicates a user's contact information and availability status based on integration with the organization's Active Directory, and Outlook Calendar features, so keeping personal contact and calendar information up to date is an important protocol.

Participants expressed differing opinions, however, on the need to indicate one's location. When working from home, one participant leaves her Lync contact information on her desk at work for anyone who stops by needing to discuss something. Two others feel it is important to indicate in Lync's activity feed area if you are working from home. Another said he would never indicate when he is working from home, as he does not feel it should matter where you are working from as long as you are available to communicate.

Personal views differ again about the etiquette of indicating whether one is busy or available. One participant described her frustration when her manager is always indicated as red: "When they're always listed as busy, it's like, we're all busy, you *should* be busy every day. But talking to me is also part of your job." In addition, she observes that "If you are just listed as busy all the time you are like the boy who cries wolf and people just interrupt you because you're always unavailable…You don't want to seem unapproachable. You need to appear available, even if it's only virtually."

Rick, on the other hand, finds that the ability for others to see he's available invites the interruptions and distractions he is hoping to avoid by working at home: "I very seldom leave myself as green because I tend to get the same types of interruptions I get as if I was in the office…If I'm wanting to get stuff done and it's time critical I use the do not disturb. If I've just got a lot of stuff on my plate and [want to be left] alone I use the busy."

4. Culture of continuous availability

Khloe sees a transformation occurring throughout the organization which she refers to as "a culture of continuous availability." This change extends beyond occasionally working more or too much, and is related to employees being continuously availability and accessible from everywhere:

> So it's hard because you end up setting a precedent that you are always going to be available. And on weekends you'll be checking or answering email. For me personally, I am OK with it because I do flex myself and I kind of balance it a bit but I certainly do end up doing more. My bigger concern is the overall culture of what we are expecting people to be available for…I feel that especially with the push and the advances in technology for mobility, and the whole unified communications presence thing, you have one phone number; no matter where you go, you're always available.

5. Tracking presence as a management tool

Two participants who are managers reported using Lync's presence feature to manage their employees. One manager used it to manage an assistant's time: "I would know when she left for a 10-minute break. I had her tagged. I would know when she was not there, when she was there, and I also had some issues with her logging in on weekends, which, as an in-scope employee, you can't do that. Or in the evening." Another manager monitors the presence of employees who work alone for safety reasons, checking in if they appear away for an extended time.

G. Attitudes and Perceptions of Others

Participants were asked about the attitudes and possible perceptions that their colleagues and managers have about them regarding working from home. Negative comments or situations experienced by participants seem to involve colleagues or managers who have limited understanding of, or experience with, working from home. Participants also suggested that these negative comments may have arisen because these colleagues or managers have traditional management styles or feelings of jealousy towards the telecommuter.

1. Colleague attitudes and perceptions

For those participants for whom working from home is a common or accepted practice within their team, or for those employees with manager support, perceived attitudes of colleagues do not appear to be an issue. One participant, who began working from home through a pilot program that has since ended, feels a bit of envy and "awkwardness" from some colleagues. For the most part, her colleagues see the benefits for her, but not for themselves, so they are happy that she can avail herself of the work at home option. Other perceptions participants report from colleagues, are that homeworkers are not working while at home, and

are less productive. One finds that the "few" colleagues who have changed their attitude toward her are "negative people at the best of times." Two participants shared that they sometimes feel guilty when working from home.

One thing that "bugs" Mark is colleagues who say they could never work from home because they don't have the willpower. "I don't think they quite understand that my time is not my time. I do not have a lot of control of my day. My admin support books my days… I'm not in a position that has the luxury of lots of time in my day when I could potentially be eating bonbons and watching soap operas!…I don't have time to have willpower."

The following quotes best illustrate the attitudes and perceptions discussed above:

> I hear all the time [that my colleagues] miss me [when I'm working from home]. I have a few friends at work who say, 'you know, we know you like working from home, but we miss you when you're not here.' Which is really, really lovely.

> I think overall from my manager and to my direct reports we are very much focused on the outcome and getting stuff done rather than where I am situated. I actually don't know what the perception of my office neighbour's are but that doesn't really matter to me.

2. Manager attitudes and expectations

Manager support appears to relate significantly to a positive telecommuting experience for participants. Participants feel their manager's attitude and expectations of them do not change when they are working from home. Many of the managers are also working from home, and respondents report they are most concerned with employees meeting deadlines for deliverables, not with work location. One respondent reflected on an "understated expectation that everyone's working above and beyond" the standard 38.75 hours each week which applies to employees no matter where they work.

The following comments sum up manager attitudes and expectations as perceived by respondents:

> [Another leader] just didn't support it…there were snide comments even though we had zero working relationships…so it really depends on your leadership and if they are supportive or not…It's tough when it's someone in the leadership that thinks when you're at home you're not working.
>
> So I wouldn't say the attitude has really changed, or the expectations. The expectations are pretty clear. This is your responsibility, this is your job, please do these things, but get it done within your 40 hours a week. If you can't do it in 40 hours in the office or you can't do it in 40 hours at home, then that's an issue with the workload and not the person, right?
>
> In her opinion, [my manager] said it has to be a certain type of individual for her to feel comfortable with [working from home]. She said I'm very high performing, I produce a lot of work, I do it in a short period of time, I'm always available by Lync; if she's ever in need of a question, I'm answering. I'm very responsive. So part of that is the technology of Lync allowing that to happen. I don't think I could work from home – no, I could definitely not work from home without Lync – there's no way.

H. Work Tasks Suited to Working from Home

What is it about the types of tasks telecommuter's perform that makes it easy or difficult to work from home? Although some participants in this study may interact with, or perform duties for patient care providers and patients, none of them are in a direct front-line service role. In this sample, findings indicate telecommuters perform the majority of their tasks on a computer, and require reliable internet service with sufficient bandwidth in order to access the organization's network for the resources they need to perform their jobs effectively from home.

Two additional factors that emerged as important or critical to the tasks performed by telecommuters under study are: accessing necessary computer and office tools, and sustaining work relationships.

1. Tasks

Participants describe their work generally as tasks they can do from anywhere, but the need for a quiet environment conducive to privacy, focused thought, and creativity appears to be central to the majority of tasks described. They find it really doesn't matter where they are sitting

as long as they have access to the information they need, which they typically access online from personal or shared files on the organization's network.

To complete these tasks, access is often required to shared drives, files, online application tools for business intelligence, clinical programs, human resources, and budget information.

A common task performed from home is working with data: "looking at data, checking data, finding data," using spreadsheets and other business intelligence tools. Respondents prepare reports, communicate information, and conduct audits, comparison analyses, and validations. Fred describes part of his role: "My work is a lot of looking at data, analyzing it, and saying, OK, how does this fit into our work? How can we improve it?"

All telecommuters report they attend online meetings and presentations through Lync. At least six participants spend a significant part of their day or week attending, requesting, or facilitating online meetings or presentations. Meeting types include both formal meetings with online presentations, such as provincial executive meetings, project meetings, or team meetings, and impromptu meetings. The majority of online meetings appear to be audio conferences with program sharing.

Online meetings or sessions are utilized to strategize, collaborate, problem solve, brainstorm, gather information or feedback, facilitate, and teach. Project work can involve meeting with interdisciplinary teams from all over the province. One respondent reported online meetings being more effective than face to face because of the ability to share and collaborate on documents.

Attending from home is also more efficient than attending a conference call at work, because in instances where privacy is required, participants need to use a phone room, which is not ideal. Khloe and Mark described that once they are in a phone room, without access to their

computer or other tools, they are unable to retrieve documents or other information from their computer they may need to refer to, or share with others on the call.

Seclusion and privacy obtained in the home environment, along with fewer distractions and interruptions, are found to be more conducive to tasks that require focus, concentration, and creativity for writing, reviewing documents, planning, strategizing, and making decisions. A significant part of one participant's role is supporting change management, and involves a lot of writing and developing plans, tools, articles, or messages.

Respondents also report the privacy of their home environment enables them to talk freely and focus on conversations. They are better able to deal with larger organizational goals, and confidential and sensitive information involved in managing staff. Fred describes the ability to focus while at home:

> So you can start digging down. There's no interruptions, there's nobody opening the door or knocking on the door. You can have dedicated time to look at and follow a path, a thought, right through to the end, trying to dig down to see what is the root cause. Then you can start putting together a plan and say, OK, this is how we're going to tackle this.

Even with a high speed internet connection at home, some respondents report moving very large files back and forth can be slower than if they were at an AHS site. Audio quality can also be "unpredictable" at home. Some participants report having to plan ahead to schedule face-to-face meetings, and to print documents they need, when they are in the onsite office.

2. Tools

Participants are unable to work from home without access to the internet and the AHS network. An audio headset or speaker is required for joining audio conferences, and a webcam is essential for videoconferencing. Three participants reported having difficulty in requesting a headset, or an additional headset to keep at home. Some participants feel having a private

dedicated home office and undergoing an ergonomic assessment of one's home work furniture are important parts of one's home "toolkit."

When using the tools that allow them to work from home, participants report the following problems: unreliable connectivity and Lync calls that drop off; slow connection, particularly when sending and retrieving files over the network; and poor Lync audio.

For tasks that directly affect patient care, and where fast response times are critical for resolving issues, a higher internet speed may be required when working from home. However, access to a quality internet service is not always available in some parts of Alberta. Two participants reported having employees who want to work from home but lack of reliable connection is forcing them back into the office. For one, this is further impacted by a shortage of available space in the office. Others are managing to work around the issues by logging in to online meetings in order to participate in program sharing, but calling in for audio through their cell phone or home phone. Now that he is fully integrated into using Lync for his telephone, Rick becomes frustrated when it doesn't work. He can log in to online meetings, but "98 percent of the time" he has to call in for reliable audio.

3. Sustaining relationships

Sias, Pedersen, Gallagher, and Kopaneva (2012), in their study of workplace friendships in electronically connected organizations, found the importance of physical proximity to workplace friendship is diminishing, but confirmed the importance of face-to-face interaction for friendship maintenance. The findings from this study suggest that the telecommuters interviewed are deliberate in their efforts to sustain work relationships, and are becoming proficient in using different Lync features to do so.

Marley referred to how teams quickly expanded following the organization's provincial amalgamation: "Literally, you could have someone on your team and not see them for eight months. And then go, "Oh wow, that's who you are and what you look like!" Even though Lync makes it easy to connect with colleagues, she believes regular face-to-face team meetings are needed to build team relationships. "We still need to see people face to face and then when we have those bridges, *then* we can use or maximize technology a little bit stronger because we've built that bridge…it is harder in the beginning with a relationship, it's more formal, stilted."

Wilma feels face-to-face meetings are essential. "I just don't want the world to get to where it's only done with Lync and email because you still need to spend a little bit of time together…at least once per year. Not even occasional. I think it's like an annual general meeting. You have to have one at least once a year."

One participant likes being half time at the office and plans her work around needs for social interaction or the work where she needs face-to-face interaction:

> I'm able to put the productivity pressure aside when I'm in the office and I can connect with my colleagues. I can do really high quality networking because I know later on in the week I'm going to have quiet productive times. And so it really is a good balance. And I don't stress over having a 15-minute conversation with my colleague because it's actually why I'm there on those days.

I. Use of Lync to Complete Tasks

Participants were asked to describe their need to perform particular types of tasks, and how they use Lync to complete them. Lync is used broadly to find or exchange information, collaborate, share or brainstorm ideas, but not as extensively for making decisions and interacting socially, which supports findings from Part A of this research project - the online survey.

1. Finding or exchanging information

All participants have a need to find or share information to complete their work tasks. How they do this varies according to the type of information required, who is involved in the exchange, and how well the person to be contacted is known by the participant.

Instant Messaging is preferred for short, quick requests or responses for information that is easily retrieved. Khloe likes to paste links to shared documents or drag documents into the IM window rather than emailing them. Due to the informality of IM, two participants only use it if they are acquainted with, or know a person well. One participant feels IM is like texting on her phone, which she only does with family and friends.

Online meetings, and sharing programs like PowerPoint to present information, are well suited for sharing information when several people are involved. SharePoint and email are also used for sharing information. Email is considered best by the participants for providing information to employees who do not sit at a personal computer for their work, like lab techs, or to people the sender does not know, in order to "set the stage." However, one participant feels that email is not a good tool for finding and exchanging information because it is a waste of network resources, poses version control issues, and messages are easily "lost."

Mark has a "high need" to find or exchange information on a daily basis. He prefers to use online meetings if there are more than four or five people involved, or if the information is complicated or ambiguous (high equivocality). For spreadsheet based information he will share a desktop program, and to edit documents, he will share the document and make changes in real time.

2. Collaborating on projects, sharing, or brainstorming ideas

Participants report they use Lync extensively for collaboration and brainstorming tasks. Although all Lync components, including online meetings, IM, program sharing, audio calls, whiteboard, and polling are being used effectively, not every component is being used by all participants.

Wilma finds it easy to "fire questions back and forth ad hoc" using IM, but many of her collaboration sessions are pre-scheduled because "people have too much on the go." If advice or expertise is required during an online discussion, it is easy to check someone's presence, and if available, add them to the call. When scheduling online meetings, Wilma adds that it is important that team members keep their calendars up to date, as Lync integrates with Outlook to determine the availability of users.

A "huge advocate" of Lync, Lucy uses all of Lync's features for collaboration and brainstorming sessions. She facilitates sessions with up to 30 attendees, but also gives information sessions to an entire department, attended by more than 100 participants at a time. The whiteboard is useful for building spontaneous agendas or taking notes during regular weekly meetings. Lucy finds it to be a "good kind of two-way listening," as it provides confirmation of what is being said and heard. "I think it's a huge advantage of Lync over an in-person meeting because you often don't have somebody standing at the front confirming what everybody is hearing in the meetings." She uses the polling feature to facilitate sessions. Polling enables participants to respond anonymously to questions, which can be saved, shared and reused. PowerPoint is used extensively, because presentations can be uploaded directly into sessions. Using PowerPoint's annotations feature, feedback can be captured right into the presentation, and

participants can write directly onto the slides. All the information gathered can be saved into a single file for sharing.

Most participants report collaborating in impromptu audio calls or online meetings to come up with solutions to problems, or touch base for last minute advice before making final decisions. Even though they find Lync to be very effective for collaborating with people they know and have a relationship with, four participants said they prefer face-to-face meetings when building relationships.

One participant holds weekly team scrums using Lync's videoconference component as a means to re-create the presence situation of meeting in a conference room. She finds polling a fun way to do "pulse checks" during the meeting, and utilizes presentations, desktop sharing, and the whiteboard as well. One issue she has experienced with videoconference meetings is the tendency of participants to become distracted during meetings. Occasionally during video calls she sees them turning away from the meeting and talking to passers-by.

Three participants reported utilizing the whiteboard for brainstorming, taking notes, or sharing information. Rick is a "firm believer that some of those brainstorming sessions are best done in person with ordering in pizza and having some pops and giving someone a marker to go up to the whiteboard." He has never tried using the Lync whiteboard feature or other components for brainstorming while working from home, but says it is something he will look into. Two other participants said they plan to learn more about using the whiteboard for brainstorming sessions and facilitation.

Koreen appreciates the time saving gained in revising documents in real time. She says with such a busy schedule, it can be difficult to find time afterwards to make changes, or remember what was decided by the group. When her manager emailed Wanda's team requesting

feedback on an issue, rather than each of them emailing individual feedback, the team met online to brainstorm as a group. Someone shared a template and feedback from all 11 team members was compiled into one document and returned to the manager for review.

Two participants are effectively collaborating on projects with external vendors outside of Canada through Lync's online meeting and program sharing components. Lync is being investigated by one participant's team for recording sessions to share with a large group across western Canada, to save on costs related to teleconferencing, videoconferencing, and commuting.

3. Making decisions

Lync components are being used for making decisions inside and outside the organization, within advisory groups, project teams, provincial executive teams, and other groups and teams, but it is not used to the same extent as for information and collaboration tasks.

Participants report Lync enables faster decision-making, and supports a variety of options for decision-making needs, such as type of decision and timeliness, that are not possible through other mediums. Simple decisions can often be made with an IM, while online meetings and sharing programs support decisions such as when to meet next, how to approach topics, and approval of documents. Even more complex decisions such as strategizing direction for provincial programs can be accomplished with Lync components.

For quick decisions, such as those required during a major incident, Khloe says Lync "helps exponentially." She can "instantly drag an entire team or two zones" into a quick huddle to figure out a game plan. Missing members can be tagged and apprised of the situation as soon as they are available.

However, Lync components may not fulfill all decision making requirements: four of eleven participants state that for decisions requiring written documentation, email is preferred.

4. Interacting socially

Eight participants report using Lync regularly to interact socially, the exceptions being two males who do not use Lync at all for social communication, and one male who may occasionally IM someone about their weekend. Some participants report only having time to socialize early in the morning or after work hours. Even with extensive social use of Lync, email continues to be used for interacting socially.

Participants use IM to "catch up," or have a "virtual coffee" with colleagues in different locations, with former colleagues, and with people outside of AHS with access to a federated Lync network like the Government of Alberta. Lucy finds it fun, and "a fantastic way to connect." Her colleagues IM, but also take time in team meetings to share pictures of their pets, or post amusing images onto the whiteboard. Another participant prefers to call people to socialize, but will IM them first to see if they are available to catch up by phone. During online meetings, two participants will sometimes engage in social IM side conversations.

Fewer participants are using emoticons, though some report their use of emoticons is increasing, and that they see others using them more as well. "It's not just happy faces – now people are giving hugs," says one participant. She thinks some colleagues who send online notes with emoticons would never give a handwritten note with a heart on it, or a hug, when face to face at the office. "It's a personality thing," says another participant. "If certain people didn't send me one of them I'd want to call them and say, 'Are you OK today?'"

Khloe says, "It's great, and you do get to catch up with people you don't get to have those water cooler conversations with, right? That's a part of work. It's not all business all the time,"

J. Strengths and Weaknesses of Lync

Participants were asked to describe how they became fully knowledgeable about the capabilities of Lync, and confident in their ability to apply the different features. Then they provided examples of situations where using Lync enables them to perform their job or task more efficiently and effectively, and a situation where Lync hindered, or negatively affected the outcome.

1. Lync knowledge and proficiency

Two participants demonstrated in-depth knowledge about Lync and application of all the features to their roles; one used the tool with a previous employer, and the other was involved in the original pilot project. Others admit that, even though they feel they are heavy users of Lync, they do not feel fully knowledgeable about Lync's capabilities, primarily because they have not had any formal training. Nearly all participants feel Lync is a "self explanatory," and "intuitive," tool, and they learned how to use it by trial and error, and assistance from colleagues. "I'm learning new things that it can do all the time," says Koreen.

Lync is installed remotely on a user's computer, typically to entire teams or departments. The majority of participants quickly adopted Lync. Wilma said her team was curious about Lync and just jumped in and figured it out. Mark and Marley didn't see the value of Lync right away. Mark says, "I didn't even notice if someone was trying to chat with me. It would flash, but I was just a very focused tunnel worker and I didn't notice it. It took me awhile to get used to it but as soon as I found the shared desktop option…that was amazing…It's been phenomenal and honestly I can't image working at home without it." Marley also transitioned to Lync over time. "I probably didn't use it the first little while at all because I'm getting equipment tossed at me, and I'm thinking, this is going to look really complicated!" Now, she's feels picking up the

phone "just seems more arduous…Lync is just easy. I don't have to remember a phone number. Just click on a person's name…and I can decide at that moment…do I want to IM, do I want to email, do I want to call?"

Learning about Lync's presence feature changed how Rick reached out to colleagues with questions. If he emailed them he might wait up to two days for a response. If he called, he might have to leave a voicemail and wait for them to get back to him. By tracking a user's presence on Lync, Rick could IM them about his question and set up a time to call, which typically took place much more quickly.

Two participants received training from the Lync services team, and another participated in an AHS online training session related to thriving in a virtual environment. The training sessions introduced the different components and how to use them. After their training, Lucy's team set up different practice sessions to try out the different features which they now share as best practice. Since then, Lucy has provided coaching, or given lunch and learn sessions to colleagues. She and her team are known as the Lync experts in her department. Three other participants also report training other users.

Overall, participants prefer to ask another user for assistance with Lync. Marley found seeing a colleague apply a feature makes all the difference. "You could read through all the features, but then all of a sudden someone uses that feature, and you're like, 'Whoa, that is cool!' " Fred likes that users can share their screen and give a visual demonstration. Koreen would like to see Lync better promoted through a variety of learning methods to assist those who are slow to adopt it, such as information resources like a "succinct, user-friendly guide" about online meetings, and alerts about programs that work well with Lync. Khloe also feels basic Lync information should be promoted to users.

2. When using Lync is more efficient and effective

Participants were asked to share a situation where Lync enabled them to complete a task more efficiently or effectively. They particularly feel using presence, IM, and desktop sharing components speed up collaboration and decision-making. When they can visually see what another is experiencing through desktop sharing, participants feel it often speeds up resolution.

Wilma doesn't know what she'd do without Lync. She shared how using Lync to chair her weekly meetings is more efficient: "I have my notes up on the screen. A few years ago everybody would have their version of it open, but they would be trying to follow what page and where you are at." Les finds he is able to better clarify spreadsheets for stakeholders through online meetings. By sharing his desktop he can effectively walk them through a spreadsheet step by step to describe assumptions, how the spreadsheet was pulled together, and what the data reveals. Koreen saves time and extra work when she can see which minimum data set at user is looking at, because she doesn't have to ask the user to describe what the page and icons look like to determine which version they have.

Using presence status enables getting the right person involved in a time-critical task. Booking online meetings is easy and timely with Outlook integration. Marley feels Lync allows for more spontaneity. "If we were to actually meet, I would have had to bring flip chart paper and markers. This way we are flip charting and marking right as we're doing it."

Following are the types of tasks participants report being able to complete more efficiently and effectively using Lync:

- Getting together and brainstorming as a group.

- Completing tasks that require high collaboration and equal participation. Lync supports collaborating in real time, any time. Users can give control of their shared screen to allow others to quickly edit, add or demonstrate, reducing participant frustration.
- Testing software development. By sharing their screen, the user can demonstrate how they use the product, what they don't like, or how something is not working for them. It allows the developer to figure out how the user is interacting with the screen, so they can change the way the software behaves and make it work better for the user.
- Taking advantage of the ability to access and share resources during a call, a benefit not possible from onsite telephone rooms.
- Facilitating sessions. "It's the fastest, most efficient, most effective way of us communicating with a provincial team." Members of a provincial team can log in to one area and be shown directly on the screen what is being discussed. Changes can be made in real time and feedback can be recorded.
- Variance reporting, looking a detailed spreadsheets. The ability to share spreadsheets and management reporting software at the same time allows for inputting and correcting data, or drilling down to find out where expenses are coming from, without having to physically lean over an assistant's shoulder, to look at the small numbers.
- Supporting clinical applications.
- Accommodating more learners or more working styles through this medium.

Mark finds the ability to pull people together quickly no matter where they are in the province amazing:

> What I really also like about Lync,… if I'm talking to someone in a one-to-one meeting and there's something that we are unable to reconcile or we actually need someone else's advice on, I can easily go to Lync and then I can easily see that person's green. [I will IM them:] 'Hey, we're just having a discussion right now, can we just parachute you in?'

> Then I just literally take their name, drop it in, it automatically dials, and you're in a three-way conference call. That is gold.

3. When using Lync can hinder or negatively affect outcomes

When asked to describe a situation where Lync hindered or negatively affected the outcome, nearly all participants paused to consider the question, and some had difficulty thinking of an example. Tasks with uncertainty, or high equivocality, involving relationships or conflict, are examples of situations that may be hindered by using Lync. Participants feel these situations are best addressed with face-to-face communication, rather than by phone or other Lync components. Fred expressed this well: "When you're doing a very difficult task, you're having a difficult conversation and there's not a trust based relationship there, then I would say face to face would be better."

One participant shared a situation about beginning a project with external vendors who spoke English with a heavy accent. Even though the first project meetings were conducted using Lync's online videoconference component to simulate face-to-face meetings, difficulties understanding conversations continued, affecting outcomes and relationships. This situation was only mitigated when the vendor representatives flew to Alberta and met with the AHS team face to face. Similarly, when a colleague she has known for more than 20 years expressed concern over some team member changes, Marley decided to meet with the team face to face, even though it meant travelling some distance to the colleague's zone. She feels the new relationships are not going to be "solid" until she makes that personal trip. "This medium [Lync]," says Marley, "even though I can see you and all of that, I'm going to make the personal touch because it will go further. So I guess in conflict or difficulties this is *not* necessarily a good mode. You can get information across but you're not helping the relationship."

Khloe and Steve have noticed meeting participants multitasking or tuning out during online meetings. Khloe feels these participants are not giving the meeting the respect it deserves, or the same attention expected at a face-to-face meeting. She finds engaging distracted or shy meeting participants requires skills in meeting facilitation.

Two other situations that can be hindered by Lync were concerns previously identified by participants that relate to presence and unreliable connection. Being overwhelmed with numerous IMs when they are busy with an important task can hinder productivity. Rick has experienced being "just too accessible" by IM. He wonders if the popularity of IM might change in future. "I think [Lync] is trendy, it's cool, it's like a text and people right now are still responding to it…ten years from today I'm not sure if that would be the same response. Because I think in 10 years we might find Lync has become like the spam on email. We don't know."

Almost all participants at some point referred in some way to the concern that when Lync isn't working, often users have no other way to complete their tasks, which hinders or negatively impacts the outcome.

K. Improving the Overall Experience of Working from Home

Participants were asked what would improve their experience working from home. Generally, participants are satisfied working from home and it is working well for them. Improvements mentioned by participants that would improve working at home are related to tools and integration, connectivity and Lync reliability, and personal concerns.

1. Tools and integration

One participant would like access to Lync on his cell phone to join meetings and send instant messages from his phone, as well as to connect to Telehealth videoconference sessions. Two participants feel it should be easier to get Lync peripherals, like headsets and webcams, to

better utilize all of Lync's features. One participant would like a wireless headset at the office and another for home because she thinks transferring hers back and forth may damage it. Another participant would like to be equipped with a printer at home, and to have SharePoint and Lync better integrated.

2. Connectivity and Lync reliability

Participants who have struggled with connectivity want Lync to be reliable, and of good quality. Two participants said better Lync audio would improve their experience working from home. For Rick, audio is critical. "If I could fix that audio issue I would be a happy, happy, happy guy. I'd probably work from home a lot more even."

3. Personal concerns

Because she has had considerable experience working from home, one participant feels she has worked out a lot of the kinks and has figured out a lot of things that make it work well. Her manager is very supportive, but she is concerned that if that situation were to change, working from home would be a challenge. She also said she wishes her dog would not bark. "Sometimes my dog barks and I wish I could figure how to not have that in the background! But I have another colleague who works from home frequently, and I hear his crying baby all the time, so I don't feel so bad now!"

Though he manages well working out of a home office set up in his dining room, Fred would like to set up a dedicated work space in a home office, so that he feels more like he's actually going to work, closing the door and at work.

Eliminating the perception within AHS that "you need to be at work to do work, and when you're not at work doing work and are working from home, you are not as productive or as useful" would improve Les' experience working from home.

Mark found he has to remember to move more when working from home. Because Lync is so "productive and efficient," he often works through the lunch hour, and when he sits at his computer all day sometimes his legs get sore. "If you're working in a cubicle space, you usually have to walk to a meeting room, or walk down for lunch," he says.

L. Importance of an Alternative Workplace Arrangement Program for AHS

Eight participants believe that it is important for employees that AHS implement a formal home working program, or alternative workplace arrangement program for employees. Conversely, three do not think a formal program is important. Manager support is a significant issue mentioned by nearly all participants. All mentioned specifically that manager support is critical for success, or that they have supportive managers. Most feel a formal AHS program would provide official support documents and guidelines for working at home.

M. How Lync Service Could Be Improved

Participants are generally satisfied with Lync service and had to stop and think carefully about how it could be improved. Suggestions overall reflected previous comments related to tools, connectivity, training and support. The following is a list of their suggestions:

- Tools: Improve the process to request and receive peripherals, such as headsets and webcams. Provide faster computers. Make the whiteboard more intuitive for facilitating online meetings. Integrate Lync with the traditional videoconference environment.
- Connectivity: Ensure reliable and consistent service for better Lync audio from home. Ensure the AHS network can support the current and future capacity of Lync users.
- Support: Provide a dedicated help line for Lync users, similar to Telehealth.
- Training: Promote online resources for Lync to assist with understanding the capabilities of the different components, and for troubleshooting issues.

VII. DISCUSSION AND RECOMMENDATIONS

This study set out to answer: 1) who in AHS is telecommuting at least 15 hours per week from home, 2) the opinions and attitudes of AHS telecommuters towards Microsoft Lync for communicating and performing collaborative tasks from home, and 3) how telecommuters are using Microsoft Lync to exchange information and ideas, collaborate, make decisions, and socialize.

An instrumental case study research design and methodology were employed to collect data from 419 participants through an online survey, and through 11 in-depth interviews. The findings from this case study reveal considerable similarity between the conclusions from the academic literature about telecommuting and the experiences of telecommuters in AHS.

Question 1: Who in AHS is telecommuting at least 15 hours per week from home?

Because of the informality of telecommuting in the organization it is difficult to determine with complete certainty the number of telecommuters who meet the criteria of working 15 hours per week from home. While this study sample did not support the literature that found telecommuters to be predominantly male (Bailey & Kurland, 2001; Turcotte, 2010), variances in definitions and sample sizes appear to have affected demographic comparisons in several of the studies reviewed by Bailey and Kurland, 2002, so other comparisons of this study's demographic data with the literature will not be made. Below is an overview of the telecommuters working from home at least 15 hours each week in AHS, who completed the online survey:

- 70 percent are female.
- 70 percent are age 40 or over.
- 75 percent have been working from home more than a year.
- 83 percent found it easy or very easy to transition to working from home.

- 60 percent work in Edmonton or Calgary.
- 33 percent work in the Information Management and Technology Services department.

Motivations for telecommuting largely support the literature that indicates work-related reasons for working from home take priority over personal reasons (Gajendran & Harrison, 2007; Tremblay, Paquet, & Najem, 2006). Although most AHS telecommuters personally requested to work from home (61 percent), it appears that the most significant motivator was organizational space shortages, or a work environment unsuited to performing work tasks, followed by reduced commuting and associated costs, or access to a private workspace free from interruptions and distractions.

Nearly 100 percent of AHS telecommuters are satisfied or very satisfied working from home. They enjoy the flexibility to balance work with personal schedules and responsibilities. The privacy and comfort of their home environment provide fewer interruptions and distractions, which supports their ability to focus on tasks, and participate more fully in confidential conversations and audio conferences. Telecommuting for AHS employees reduces commuting time and associated costs, benefits noted in the research. Like previous studies show, the flexibility and time benefits gained from telecommuting are perceived by telecommuters to result in increased productivity, increased efficiency, and improved quality of life (Azarbouyeh & Naini, 2014; Bailey & Kurland, 2002; Bloom, et al., 2013; Dutcher, 2012; Gajendran &Harrison, (2007); Pinsonneault & Boisvert, 2001). Additional benefits reported include: improved health, wellbeing and happiness; increased engagement with colleagues and the organization; improved morale; higher job satisfaction; and job retention. These advantages were also reported in the research literature (Bloom, et al., 2013; Joyce, et al., 2010; Gajendran & Harrison, 2007).

The tasks performed by AHS telecommuters are typically done on a computer, and can generally be done from anywhere that is quiet and provides access to the organization's network to retrieve files and resources needed to perform their work. Working with information and data, and facilitating or attending online audio meetings and presentations is common.

It was notable to find that the majority of telecommuters see no change in their quality of work, which supports findings from Bloom et al., (2013), but not the findings from the recent Bank of Montreal Commercial Banking (BMO) (2014) study which states that Alberta companies who offer telecommuting report a positive impact on the quality of work. When asked about observed changes to their quality of work, 59 percent of AHS telecommuters reported no change, compared to 29 percent indicating an improvement. As well, when asked about benefits telecommuting provides for their managers and the organization, only 37 percent indicated improved quality of work. This could be because telecommuters feel that they produce quality work equally at home and at the worksite. An organizational culture of high performance was indirectly inferred by participants in the interviews; they mentioned working longer hours until an important job was completed. Referring to adopting Lync, one participant said, "that's the kind of people we are…we're curious about it and we just get in and figure it out…That's how our whole world is. We just jump." Another participant said, "there is this understated expectation that everyone's working above and beyond. And it's frowned upon to work just your 38.75 [hours per week]."

Employees view working from home as a financial benefit to the organization, as they are providing their own work space and associated utilities, office furniture, internet service, and in many cases, computer equipment and peripherals, and telephone service. Employees also feel that because they are often working more or longer hours, the organization is benefitting

financially through their increased productivity. In spite of the personal costs incurred to work from home, some employees feel it is a fair tradeoff to have a workspace they feel is more conducive to completing their work tasks more effectively and efficiently, to avoid commuting and its associated costs, and to fulfill personal responsibilities. Telecommuting may also benefit the organization by enabling employees home bound by illness, injury, or personal obligations to continue in the workforce.

Despite these benefits, 40 percent of AHS telecommuters find they are working more or too much as a result of telecommuting. Thirty-three are currently experiencing personal isolation, missing social interaction with colleagues, and 26 percent report professional isolation, feeling "out of loop," and possibly missing out on opportunities for advancement. These disadvantages are commonly reported in the literature as well (Bloom, et al., 2013; Dahlstrom, 2013; Gajendran & Harrison, 2007). AHS telecommuters report being conscious of keeping in touch, to maintain identification with their teams and work groups. Telecommuters who consider themselves to be "homebodies," prefer to work alone, or spend considerable time in online meetings report being unaffected by isolation.

It is important to note, however, whereas response rates about experiencing specific benefits ranged positively from 52 – 94 percent, response rates associated with concerns about telecommuting ranged from 4 – 40 percent, and 33 percent indicated no concerns, drawbacks or obstacles encountered with telecommuting. These findings suggest the perceived benefits experienced by AHS telecommuters may outweigh the concerns encountered.

Negative attitudes towards telecommuters by colleagues or managers appear to be few, and related to traditional management styles, feelings of jealousy, and limited understanding of or experience working with working from home. Participants appear to be keenly aware of the

importance of relationships at work and the negative effects telecommuting can have on their ability to stay connected with colleagues and managers. Perhaps less so, but still evident, is the possibility that working away from an AHS worksite may affect opportunities for advancement and learning. A formal alternative workplace arrangement program should ensure those supervising telecommuters arrange regular face-to-face team social events, and monitor education needs. Incorporating the benefits and concerns of telecommuting experienced by employees and their managers into annual performance appraisals is another means of tracking effects over time.

Similar to findings of an Australian telecommuting case study by Meyers and Hearn (2000), AHS telecommuters who have manager support feel more valued and trusted by their managers and the organization. In addition, by piloting an alternative workplace arrangement program, and enabling employees with Lync, AHS has acted in a manner that demonstrates the organization is "technologically progressive and…keen to experiment with new forms of flexible work options" (p. 10). Formalizing the program with alternative workplace arrangement policies and guidelines for managers, telecommuters, and co-workers, will confirm administrative support, reduce ambiguity around expectations, and ensure required tools and peripherals are provided for a successful telecommuting experience. Providing an online space for telecommuters to congregate may also assist with addressing issues and concerns through the sharing of best practice. Dahlstrom's (2013) study of telecommuting and leadership style also found trust to be a "critical" success factor, along with leadership support and communication (p. 448).

One interview participant who is successfully telecommuting and managing a virtual team indirectly suggested employing an output based management style that is focused on

meeting work deliverables versus the common behaviour-based management style that evaluates performance based on observable actions. He could cite impressive team performance statistics, and spoke of conscious efforts to develop an effective team. Rather than focusing on the working at home aspect of the telecommuter, he feels it is more important to hold manager-employee conversations to set clear expectations, and then help employees achieve their goals. Gajendran and Harrison's (2007) study identified this type of management style as a strategy to adapt to the manager's reduced interaction with, and control over telecommuters. This view is further supported by Dahlstrom (2013). He cites Pearlson and Saunders (2001) who suggest "clear business objectives and measures, frequent and multiple communications, and well-supported infrastructure" (pp. 448-449) as success factors for telecommuters.

Most telecommuters in AHS report the need for a work environment that is free from distractions and enables the worker to focus for periods of time on data management, writing, and creative thought. In light of the feedback from this study, managers should also ensure that telecommuters are equipped with an appropriate ergonomic physical set up in the home.

Question 2: What are the opinions and attitudes of AHS telecommuters towards Microsoft Lync for communicating and performing collaborative tasks from home?

In general, telecommuters in AHS report being very satisfied with the capabilities of Microsoft Lync 2010 to support their needs for communication and collaboration. They identified a need for reliable audio and connectivity, easy access to peripherals, as well as support and training. Unfortunately, there is very little research available about the in-depth use of advanced communications technologies for organizational communication and collaboration to consult for comparison purposes.

Overall, the opinion of survey participants is that Lync is good or excellent for obtaining immediate feedback; sharing information in a variety of ways; transmitting knowledge; working well with others; actively participating; finding the right information quickly; brainstorming ideas; focusing on a task; contributing equally; building connections/networking; and speaking naturally. Although still rated as good or excellent by 65 - 72 percent of survey respondents, fewer users feel Lync is a capable tool when people need to: reach agreement/consensus; make decisions; socialize; and develop trust. Ten percent of respondents feel Lync is poor, or not applicable, for socializing, or for fostering trust.

Presence status is the Lync component utilized most often, followed by instant messaging (IM), scheduling online meetings, and sharing desktops or programs. Polling, whiteboard, and video recording are used the least. Interviews indicated that the limited use of these features is most likely due to participants having limited knowledge and skill about the components' capabilities and application in typical work situations. Interview participants who are not using them indicated that they plan to learn how the features can be applied to their tasks.

The ability to track the presence of employees, and communicate in a variety of ways at any time, from anywhere, appears to coincide with a changing attitude throughout the organization about the concepts of presence, availability, and accessibility. This is viewed as a "double-edged" sword by some participants.

Most telecommuters are spending a significant amount of their work time involved in online meetings to share information and ideas, and collaborate. A lack of necessary peripherals, outdated software, and unreliable internet or VPN connection are shown in the study findings to negatively affect task outcomes by causing time delays, confusion, frustration and lost productivity. Teams that interact frequently and share programs should have compatible

software. Participating in training provided by the organization or from within the work group on the various Lync components and how to apply them specifically to team tasks can go a long way to enabling more effective and productive meetings.

A central finding from this study is that telecommuters require reliable connectivity to the AHS network, and Lync audio in addition to efficient access to peripherals, ongoing technical support, and training. Although overall performance of Lync was rated as good or excellent by 72 percent of participants, audio was reported as poor or unacceptable by 25 percent of respondents. In an effort to better understand the possible reasons for Lync audio issues, the Researcher consulted with an AHS Lync subject matter expert, who identified three factors that can impact a home worker's experience with real-time software applications like Lync:

1. Hardware, including a user's personal computer (PC) or laptop, and associated peripherals, like headsets. AHS provides standardized Lync headsets and microphones that have been certified for use by Microsoft. The use of non-standardized headsets may cause audio issues.
2. Challenges introduced by the user's computer environment. Common issues are the operating system and drivers, as well as security updates. The vast majority of users who have common and current software versions installed on their PC or laptop report fewer Lync audio issues to the internal Lync support team. Organizational implementation of a Group Policy Object (GPO) configuration that enforces all drivers to be at a current, or older but proven, version is a possible solution.
3. Internet service. The network layer that Lync relies on to deliver real time audio content has a very low tolerance for latency (time delays as data packets transmit from one point to another), network congestion (excessive data), and/or packet loss

> (one or more packets of data travelling across the network fail). Internet service providers in Alberta have acknowledged challenges in meeting all customer demands; the strengths and weaknesses of their services vary throughout the province, which can result in an inability to provide customers with the quality they require.

It was suggested that telecommuters experiencing Lync audio problems at home can test the quality of their internet service with an application similar to Lync, like Skype. If issues are similar for both, switching to a different internet service provider may improve audio quality.

Lync appears to effectively support telecommuting within the organization as long as users have appropriate and reliable internet access. Since audio conferences are a significant media for conveying information, collaborating, sharing ideas, and making decisions throughout the organization, assisting telecommuters to achieve consistent and reliable audio quality will be key to ensuring growth of this medium and future adoption of the videoconferencing feature.

Once users become more familiar with Lync's capabilities to record, store, retrieve, and share communication artifacts from conferences involving program sharing, whiteboard and polling, a drop in the use of email (referred to by one participant as "old school") for file and document management and storage may decrease.

Survey results clearly indicate that Lync users prefer to troubleshoot issues on their own, or seek assistance from other users, rather than contact the help desk, Lync team, or other available resources. The interviews identified a number of "super users" who not only have a thorough understanding of the components and are effectively applying them to a variety of communication and collaboration tasks, but are also keen to share their knowledge with others. Developing an online forum within AHS for all Lync users, moderated by super users, could add value to the tool, encourage peer recognitions, and provide a more economical solution for

troubleshooting than employing a dedicated support team. Everett Rogers' (2003), *Diffusions of Innovations* model suggests the innovation diffusion process is a very social process involving interpersonal communication relationships. Based on this theory, it can be predicted that AHS employees may be more likely adopt Lync when their decision is informed by a subjective evaluation "conveyed to them from other individuals like themselves who have already adopted the innovation" (pp.111-112).

Lync 2010 components address many of the factors identified in Media Richness Theory (MRT) (Daft & Lengel, 1982) for reducing uncertainty and equivocality in information processing, such as the ability for immediate feedback, multiple cues, personalization, and natural language. However, consistent with this theory, telecommuters identified a preference for face-to-face interactions for tasks and situations with high uncertainty and equivocality, and particularly where relationships are critical to the outcomes.

Similar to the findings of Kahai and Cooper (2003), this research reveals that once a team has begun working effectively together, their need for non-verbal cues like appearance, gestures, eye contact and gaze, etc. may be reduced for collaborative tasks. Rather than needing to see each other, it is more important to them that they can see and present information using programs on their computer. Kahai and Cooper (2003) describe how nonverbal cues can be communicated to a limited extent using leaner media like IM. Facial expressions like smiles, frowns, and winks; paralanguage, or vocal characterizers, like yawning, laughing, or crying; vocal qualifiers such as volume and pitch; and vocal segregates like shh, ooh, hmm, can be communicated using emoticons or text equivalents of the verbal. IM is heavily used by telecommuters; employing these nonverbal cues and including links to files or additional

resources in the text box may increase its ability to convey information of higher uncertainty and equivocality.

Due to the ability to support communication one-to-one, one-to-many, and within a group, 24 hours a day, unified communications systems like Lync may eventually redefine what "lean" and "rich" media mean to organizational communication.

Question 3. How are telecommuters using Microsoft Lync to exchange information and ideas, collaborate, make decisions, and socialize?

AHS employees report a strong need to share information and ideas, collaborate, make decisions, and interact socially throughout the province. In an organization as large and diverse as AHS, exploiting intellectual capital and sharing knowledge are critical success factors. Information technologies like the intranet have been successfully utilized to share explicit knowledge with employees, such as organizational goals, policies, and procedures. However, with the increasing prevalence of geographically distributed, provincially focused teams throughout AHS, technology is often the only way to effectively transmit tacit knowledge. This "knowing how" type of knowledge, which Daft and Armstrong (2012) describe as "professional know-how, individual insights and creativity, and personal experience and intuition" (p. 300), may be one of the most critical applications of Lync's components because it will enable "conversation and person-to-person sharing of experience, insight, and ideas" (p.300).

The study suggests that the communications media described by Media Richness Theory (Daft & Lengel, 1983) to be leaner, or poorer, than face-to-face, are being used effectively by virtual teams within AHS to support finding and sharing information, collaborating and brainstorming, making decisions, and interacting socially. In some instances involving ambiguous tasks with a high degree of uncertainty, AHS employees are applying a combination

of media, such as audio conferencing and program sharing, and the result is an outcome that is reported to be superior to what could be achieved using traditionally rich media like face-to-face communication. As well, users report adjusting their communication media choice if they know how the receiver prefers to communicate.

Illia and Roy (2001), suggest that new media "offer new opportunities of communication that are not taken into account by the MRT" (p. 2), such as the variety of signals, and use of simultaneous signals, as they offer video, audio, color, text and graphics that can be used together at the same time. (p. 2). They found that managers "attempt to maximize classical richness and technological richness under the constraints of cost and communication quality" (p. 7), explaining that email, though considered to be a lean, or poor media, is utilized by managers for equivocal tasks because it is low cost and easy to use, whereas videoconferencing, which at the time this study was undertaken, was more expensive, harder to use, and proved difficult to memorize, store and retrieve. Although it has been just over a decade since Illia and Roy's study, today's unified communications systems challenge their notion of cost. Richer communication choices, like desktop videoconferencing, are now much more easily accessible, convenient to use, and cheaper than traditional videoconferencing, and provides the ability to record, store and share the recordings with others at any time. Illia and Roy's (2001) quality constraints might apply, however, to managers who choose to use Lync audio and video conferencing based on connectivity issues that negatively affect the quality of the communication. Several participants in this study commented that poor Lync audio quality or videoconference issues negatively affect outcomes, and affect their choice to use them for tasks.

Overall, interview participants report satisfaction with Microsoft Lync for communication and meeting their needs to find and share information, collaborate on projects and brainstorm

ideas, make decisions, and socialize. They use Lync mostly for checking the presence of contacts, IM, facilitating and participating in online audio meetings, and program sharing for providing information and collaborating. Although Lync is used for decision making, its use is dependent upon the type of decision required. The use of Lync for socializing by this group varied most widely, from not at all, to frequent use of utilizing multiple components.

VIII. RESEARCH LIMITATIONS

It is important to address some research limitations present in this study. The small sample size of 419 survey respondents and 11 interview participants from one particular organization and industry cannot be generalized to other industries and organization sizes. As this single case was studied with exploratory, inductive and descriptive intent, comparability and generalizing for research impact were not foremost concerns (Miles, Huberman, & Saldana, 2014, p. 38). The Researcher aimed to understand the multiple realities of telecommuters by briefly stepping inside their world to seek their attitudes, perspectives, and meanings of their experiences. As a case study, the intent is to add depth to the findings in the literature, and provide insight for organizations considering the implementation of an alternative workplace arrangement program, or a unified communications system for their employees.

Another limitation is that the interview subjects volunteered to participate. They were randomly selected based on geographic location and professional role, but their willingness to participate in this study indicates they may have a stronger interest in telecommuting and using Lync than others in the organization, and may feel they are well suited to telecommuting and/or more knowledgeable of the technology. As would be expected for research subjects enthusiastic about this topic and their work, they may have been attempting to report in a way that would contribute positively to telecommuting within the organization, and as a consequence reported activities to reflect what they consider most appropriate for the phenomenon.

IX. CONCLUSION

This research study reveals a great deal about who is telecommuting in AHS, the benefits and drawbacks they are encountering, and their needs for communicating and collaborating within and outside of the organization. The foundation of this study was the need to describe how telecommuters utilize Microsoft Lync to work from home, and to explore if they are able to communicate and collaborate effectively form home using the technology. Media Richness Theory offered a possible explanation for the reasons why Lync users might choose or combine various components for different communication and collaborative tasks based on uncertainty and equivocality. It appears that, overall, theory and practice align.

In an effort to meet ongoing operational challenges, and the change in workforce demographics, the organization continues to exploit new technologies that can provide greater mobility, flexibility and collaboration. Alternative workplace arrangements like telecommuting offer AHS an opportunity to address space and operational issues, increase environmental stewardship and, at the same time, offer employees a means to achieve private work spaces, greater work-life balance, and increased affiliation with the employer, which may result in increased job satisfaction and retention.

Alberta Health Services could effectively extend this study to explore the positive and negative effects of telecommuting not only for telecommuters, but also for virtual teams or groups, office-based workers, and the organization as a whole. Additional variables to expand upon include: telecommuter role, job characteristics, skills and personality; family structure; and the extent that employees now commute to a worksite base or to physically attend meetings around the province. Indeed, as the needs and effects of telecommuting are expected to change for study participants over time, Alberta Health Services is well placed to consider the

implementation of a longitudinal study on telecommuting that explores the positive and negative long-term effects of telecommuting across all four telecommuting issues identified in the literature related to workplace, technological, organizational, and environmental (Siha, & Monroe, 2006; Bélanger, Watson-Manheim, & Swan, 2013).

Whatever decisions are made by AHS about the future of telecommuting within the organization, it is recommended that both the extensive research literature on this topic as well as AHS employees themselves be consulted. It was clearly evident in this study that telecommuting AHS employees care deeply about this workplace arrangement and have thoughtful opinions to share. A successful telecommuter and leader within the organization sums up his feelings towards telecommuting within AHS:

> We sometimes lose very valuable brain power just because we insist [employees] live in a certain area or they come to a certain office. You know the funny thing is I probably would have thought the same years ago, but really it's been a very effective way to do business. For example, my business analyst was looking at moving [out of province] because of her husband so she applied to work remotely and they weren't going to give it to her. I said, 'you have to.' This is somebody that I don't need to see face to face. I just need her brain to work with me because it's been very effective. I think we have to lose some of our traditional ideas of what we need and open the doors. But it comes with clear expectations and having more results based types of performance assessments. It's not about where you are and what time you spend at table but are you delivering? Are you delivering what you said you would?

X. REFERENCES

Alberta Health Services. http://www.albertahealthservices.ca/191.asp.

Alberta Office of Statistics and Information. https://osi.alberta.ca.

Aaltonen, A., & Eaton, B. (2009). Exploring the impact of real-time communication on media choice in the context of distributed work. *17th European Conference on Information Systems (ECIS) 2008 Proceedings.* Paper 5. Retrieved from http://aisel.aisnet.org/ecis2008/5.

Azarbouyeh, A., & Jalali Naini, S. (2014). A study on the effect of teleworking on quality of work life. *Management Science Letters, 4*, 1063–1068.

Bailey, D., & Kurland, N. (2002). A review of telework research: Findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior, 23*, 383-400.

Bélanger, F., Watson-Manheim, M.B., & Swan, B. (2013). A multi-level socio-technical systems telecommuting framework. *Behaviour & Information Technology, 32*(12), 1257-1279.

Bjørn, P., & Ngwenyama, O. (2009). Virtual team collaboration: building shared meaning, resolving breakdowns and creating translucence. *Information Systems Journal, 19*(3), 227–253.

Bloom, N., Liang, J., Roberts, J., & Ying, Z. (2013). Does working from home work? Evidence from a Chinese experiment. Retrieved from http://web.stanford.edu/~nbloom/WFH.pdf.

BMO Financial Group, (January, 2014). BMO: Workplace Optimism on the Rise Among Canada's Labour Force. Survey results retrieved from http://newsroom.bmo.com/press-releases/bmo-workplace-optimism-on-the-rise-among-canada-s-tsx-bmo-201401140921624001.

Bradley, T., & Shah, S. (2010). *Unified communications for dummies.* Hoboken, NJ: Wiley

Publishing, Inc.

Cooper, C. D., & Kurland, N. B. (2002). Telecommuting, professional isolation, and employee development in public and private organizations. *Journal of Organizational Behavior, 23*, 511-532.

Cramton, C.D. (2002). Finding common ground in dispersed collaboration. *Organizational Dynamics, 30*(4), 356-367.

Creswell, J.W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Creswell, J.W. (2013). *Qualitative inquiry & research design: Choosing among the five approaches* (3rd ed.). Los Angeles, CA: Sage Publications, Inc.

Daft, R., & Armstrong, A. (2012). *Organization theory & design* (2nd ed.). Toronto, ON: Nelson Education Ltd.

Daft, R.L., & Lengel, R.H. (1983). Information richness: A new approach to managerial behavior and organization design. *Organizations as Information Processing Systems*. College Station, TX: A&M University. Retrieved from http://www.dtic.mil/dtic/tr/fulltext/u2/a128980.pdf

Daft, R.L., & Lengel, R.H. (1986). Organizational information requirements, media richness and structural design. *Management Science, 32*(5), 554-571.

Daft, R.L., Lengel, R.H., & Trevino, L.K. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly, September,* 355-366.

Dahlstrom, T. (2013). Telecommuting and leadership style. *Public Personnel Management, 42(*3), 438-451.

Dennis, A, & Kinney, S. (1998). Testing MRT in the new media: The effects of cues, feedback, and task equivocality. *Information Systems Research, 9*(3), 256-274).

Dutcher, G. (2012). The effects of telecommuting on productivity: An experimental examination. The role of dull and creative tasks. *Journal of Economic Behavior & Organization, 84,* 355-363.

Ellison, Nicole B. (2004). *Telework and social change: How technology is reshaping the boundaries between home and work.* Westport, CT: Praeger Publishers.

Ernst & Young, & Center for Democracy & Technology. (2008). Risk at home: Privacy and security risks in telecommuting. Survey results retrieved from https://www.cdt.org/files/privacy/20080729_riskathome.pdf.

Felstead, A., & Jewson, N. (2000). *In work, at home: Towards an understanding of home working.* London, UK: Routledge.

Gajendran, R. S., & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology, 92*, 1524-1521.

Illia, A., & Roy, M.C. (2001). Traditional media and new IT: Investigating their media richness versus their technological richness. *Academy of Information and Management Sciences Journal, 4*(2), 79-92.

Joyce, K., Pabayo, R., Critchley, J.A., & Bambra, C. (2010). Flexible working conditions and their effects on employee health and wellbeing. *Cochrane Database of Systematic Reviews, 2.* Retrieved from

http://summaries.cochrane.org/CD008009/PUBHLTH_flexible-working-conditions-and-their-effects-on-employee-health-and-wellbeing.

Kahai, S., & Cooper, R. (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), 263-299.

Kugelmass, J. (1995). *A manager's guide to flexible work arrangements,* New York, NY: Lexington Books.

Kurland, N., & Bailey, D. (1999). The advantages and challenges of working here, there, anywhere, and anytime. *Organizational Dynamics, Autumn,* 53-67.

Lee, C.S., Watson-Manheim, M.B., & Ramaprasad, A., (2009). Usage of communication portfolios in distributed work environments. *First Monday, 14*(8). Retrieved from http://firstmonday.org/ojs/index.php/fm/article/view/2595/0.

Manochehri, G., & Pinkerton, T. (2003). Managing telecommuters: Opportunities and challenges. *American Business Review, 21*(1), 9-16.

Merriam, S. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.

Merrigan, G., Huston, C., & Johnston, R. (2012). *Communication research methods* (Canadian ed.). Don Mills, ON: Oxford University Press.

Meyers, N., & Hearn, G. (2000). Communication and control: Case studies in Australian telecommuting. *Australian Journal of Communication, 27*(2), 39-64.

Microsoft®, (2011). Work. It's what you do. Not where you go. Meeting the telework imperative. Unified communications for government agencies. Retrieved from www.microsoft.com/telework.

Miles, M., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis. A methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Morganson, V., Major, D., Oborn, K., Verive, J., & Heelan, M. (2010). Comparing telework locations and traditional work arrangements: Differences in work-life balance support, job satisfaction, and inclusion. *Journal of Managerial Psychology, 25*(6), 578-595.

Murray, S.R., & Peyrefitte, J. (2007). Knowledge type and communication media choice in the knowledge transfer process. *Journal of Managerial Issues, 19*(1), 111-133.

Noonan, M., & Glass, J. (2012). The hard truth about telecommuting. *Monthly Labor Review, June 2012,* 38-45.

North, J., (2010). The total economic impact of Microsoft Lync Server 2010. Cambridge, MA: Forrester Research, Inc.

Olson, G., & Olson, J. (2000). Distance matters. *Human-computer interaction, 15*(2), 139-178.

Reimer, K, Frößler, F., & Klein, S. (2007). Real time communication – mode of use in distributed teams. Proceedings of ECIS'07, University of St. Gallen, 286-297.

Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Savin-Baden, M., & Howell Major, C. (2013). *Qualitative research. The essential guide to theory and practice.* New York, NY: Routledge.

Sevinc, I., & D'Ambra, J. (2004). Extending media richness theory: The influence of a shared social construction. *ECIS 2004 Proceedings.* Paper 174. Retrieved from

http://aisel.aisnet.org/ecis2004/174.

Sias, P.M., Pedersen, H., Gallagher, E.B., & Kopaneva, I. (2012). Workplace friendship in the electronically connected organization. *Human Communication Research*, *38*, 253–279.

Siha, S.M., & Monroe, R.W. (2006). Telecommuting's past and future: A literature review and research agenda. *Business Process Management, 12*(4), 455-482.

Singer, E., & Ye, C. (2013). The use and effects of incentives in surveys. *The ANNALS of the American Academy of Political and Social Science, 645,* 112-141.

Tremblay, D., Paquet, R., & Najem, E. (2006). Telework: A way to balance work and family or an increase in work-family conflict? *Canadian Journal of Communications, 31,* 715-731.

Turner, D. W. (2010). Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, *15*(3), 754-760. Retrieved from http://www.nova.edu/ssss/QR/QR15-3/qid.pdf.

Yin, R. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Yin, R. (2012). *Applications of case study research* (3rd ed.). Los Angeles, CA: Sage Publications, Inc.

XI. APPENDICES

Appendix A Online Survey Instrument

Welcome to the online survey (Part A) of the research study Lync-ing Telecommuters for Collaboration: case study of a healthcare organization.

As an AHS employee working from home **at least 15 hours each week**, I am interested in your opinions and experience using Lync to communicate and collaborate with others.

The survey will take about 10 - 15 minutes to complete. Your participation is voluntary and your answers will be kept confidential. All responses will be compiled together and analyzed as a group.

Completing the survey is your consent to participate. You are not obliged to answer any specific questions, you may skip questions, and you may end the survey at any time. You may ask the researcher to have your collected data destroyed and withdrawn from the study within five (5) days following your participation. Only surveys with email addresses are able to be withdrawn.

Please provide your email address at the end of the survey if you are willing to participate in a **personal interview.** I am interested in your personal experience using Lync while working at home and your opinions on the efficacy of Lync to communicate and perform various work tasks. The interview will last about 45 – 60 minutes.

If you meet the eligibility requirements of working from home at least 15 hours each week, you can enter the **draw for a $50 gift card** by providing your email address at the end of the survey. The odds in favour of winning are approximately 1:100, assuming about 100 people complete the survey.

For more information about the survey, please contact Lenore Delday at jdelday@ualberta.ca.

SECTION ONE: Your experience working from home

1. On average, how many **hours per week** do you spend working from your home?
   *NOTE: if you work **less than** 15 hours per week from home, please do not complete the survey.*
   a. 15 – 20 hours
   b. 21 – 30 hours
   c. 31 - 40 hours
   d. More than 40 hours

2. **How long** have you been working from home as an AHS employee?
   - Less than 3 months
   - 3-6 months
   - 7-12 months
   - 1 -2 years
   - More than 2 years

3. How did you start working from home?
   - I myself made the request to work from home
   - I was asked to consider working from home by my manager or someone in the organization

4. How easy or difficult was it for you to begin working from home?

Very Easy	Easy	No Opinion	Difficult	Very Difficult

5. Did someone provide you with guidelines, processes, or policies for interacting and communicating virtually within AHS?
    a. Yes
    b. No
    c. Comment - *QUAL*

6. How has your **productivity** (amount of work you are able to complete each day) changed during the days you work from home?

Significantly increased	Somewhat increased	No change	Somewhat decreased	Significantly decreased	Do not know

7. How has your **efficiency** (time and effort required to complete work) changed during the days you work from home?

Significantly increased	Somewhat increased	No change	Somewhat decreased	Significantly decreased	Do not know

8. What changes have you or your manager observed with your **quality of work** since you began working from home?

Significantly improved	Somewhat improved	No change	Somewhat worse	Significantly worse	Do not know

9. What changes have you experienced with your **quality of life** since you began working from home?

Significantly improved	Somewhat improved	No change	Somewhat worse	Significantly worse	Don't know

10. Which of the following **benefits** have you realized since you began working from home? (*Check all that apply, or NO benefits*)
    - Little or no disruption of work from environment (noise, interruptions, etc.)
    - Increased productivity
    - Increased autonomy/independence
    - More flexible work schedule
    - Fewer missed days of work
    - Less commuting and associated costs
    - More control over my life
    - More time to spend with my family
    - **No** personal benefits realized (if this choice is checked, no others above it can be selected)

11. Please add any other key benefits **you** have realized since you began working from home.
    - *Qualitative Open Text Box*

12. Which of the following benefits do you feel your **manager and/or the organization** have realized since you began working from home? (*Check all that apply, or NO benefits*)
    - Fewer missed days of work
    - Increased productivity
    - Improved quality of work
    - Additional hours of work
    - **No** employer benefits realized (if this choice is checked, no others above it can be selected)

13. Please add any other key benefits you feel your **manager and/or the organization** have realized since you began working from home. *Qualitative Text Box*
14. Which of the following **concerns, drawbacks or obstacles** are you are presently experiencing while working from home? (*check all that apply*)
    - Isolation
    - Boredom
    - Procrastination or lack of motivation
    - Work more or too much
    - Decreased autonomy/independence
    - Household or family distractions or conflicts
    - Concerned I am "out of sight, out of mind" from my manager/supervisor which may impact my ability to be promoted or advanced
    - Concerned I may receive less job training or fewer learning opportunities
    - **No** concerns, drawbacks or obstacles experienced while working from home (if this choice is checked, no others above it can be selected)

15. Please add any additional drawbacks, problems, or obstacles you are experiencing while working from home.
    - *Qualitative Text Box*

16. Overall, how satisfied are you with working from home?

Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied

SECTION TWO: Your experience using Lync while working from home

17. How long have you been using Lync?
    - 6 months or less
    - 7-12 months
    - 1-2 years
    - More than 2 years

18. Is everyone you communicate with in AHS enabled with Lync?
    - Yes
    - No

    18a. IF NO, please describe any ways your work is affected by your contacts not being enabled with Lync. *Qualitative Text Box.*

19. Do you use Lync to communicate or collaborate with one or more **external** clients, partners or vendors?
    - Yes
    - No

20. On average, how often do you perform the following activities using Lync's various components?

	Every day	A few times each week	A few times each month	Occasionally	Never/Unaware/ No access
Check the presence of a contact to determine the best way to connect					
Initiate an Instant MesSage (IM) conversation with more than one contact					
Send a file during an IM conversation					
Schedule an online meeting					
Join an online meeting					
Share desktop or program (Word, Excel, etc.) during an online meeting					
Give or take control during an online meeting					
Video – Initiate or participate					
Video – Record or view/play back					
Send an IM or start a sharing session from Microsoft Word, Excel, or PowerPoint					
Share a Whiteboard					
Initiate a Poll					

21. Considering your experience using Lync's various components (presence, IM, audio, online meetings, program sharing, poll, video, record, etc.) to communicate and collaborate, what is your overall opinion about **Lync's capabilities to foster** the following?

	Excellent	Good	Satisfactory	Poor	Unacceptable	N/A
Get immediate feedback						
Find/gather the right information quickly						
Share information in a variety of ways						
Brainstorm/share ideas						
Reach agreement/consensus						
Make decisions						
Focus on a task						
Transmit knowledge						
Build connections/network						
Work well with others						
Actively participate						
Equally contribute						
Speak naturally						
Foster trust						
Socialize						

22. Please rate the **quality** of the following Lync Components when working from home.

	Excellent	Good	Satisfactory	Poor	Unacceptable	Have not used/ No access
Contacts /Presence						
Instant Messaging						
Audio						
Desktop /Application Sharing						
Video						
Video Recording						
Whiteboard						
Polling participants						

23. Where do you prefer to get help with Lync when working from home?

- Trial and error on my own
- Assistance from other users
- Lync help menu
- AHS help/service desk
- Lync UCS support team
- Web resources (other sites)
- Other

24. How would you rate Lync's **overall performance** while working from home?

Excellent	Good	Satisfactory	Poor	Unacceptable	N/A

- 24a. Why did you rate Lync's overall performance as below average or extremely poor while working from home? *Qualitative Text Box*

SECTION THREE: DEMOGRAPHICS

25. Where do you work from home?

- Large City – Calgary, Edmonton
- Small City or Town
- Rural or Remote Location

26. In addition to working from home 15 or more hours each week, please identify which other locations you perform your work, and the amount of time spent at each, during a typical work week:

Location	Less than 1 day/wk	1 -2 days/wk	3 or more days/wk	N/A
Personal or shared space at AHS worksite				
Mobile ahs worksite				
Non-ahs mobile worksite or client site				

27. Gender

- Male
- Female

28. Age
    - 18 – 28
    - 29 – 39
    - 40 – 50
    - 51 – 61
    - 62 or older

29. What is your Full Time Equivalent (FTE) status?
    - Full time
    - Part time

30. What is your role with AHS? (*check all that apply*).
    - Leadership (Executive, Director, Manager)
    - Administrative Support (Clerical, Analyst, Specialist, etc.)
    - Out of Scope
    - In scope
    - Operations (indirect patient care, facility support, etc.)
    - Clinical (direct patient care)
    - Information Management and Technology Services (IMTS) department
    - Other, please specify – *Qualitative Text Box*

31. How old is your AHS computer or laptop?
    - 0 - 1 years
    - 2 – 3 years
    - Greater than 3 years
    - Do not know

32. When working from home, who is your service provider?

    a. Bell
    b. Rogers
    c. Shaw
    d. Telus
    e. Xplornet
    f. Other
    g. I do not know
    h. 32a. If other, please specify: *Qualitative Text Box*

33. What do you use for your **primary Virtual Private Network (VPN) access**?

    - Citrix
    - Fortigate
    - NetMotion VPN
    - Nortel VPN
    - Other
    - I do not know

34. What type of internet connection do you mostly use when working from home?

    - Wired
    - Wireless

35. How many Kilometres (**one way**) do you need to travel to your closest AHS worksite?

- 1 - 5
- 6 - 10
- 11 - 15
- 16 – 20
- 21 – 30
- 31 or more

You have completed the online survey portion of this study (Part A).

Thank you for your participation!

Contact Information for personal interview and/or prize draw ***(Respondents taken to a new survey)***

Please complete the following information to volunteer for a personal interview and/or to enter the prize draw.

Please note that this information will not be linked to your survey responses, and your responses to the survey will remain anonymous.

Please consider me for a **personal interview** to share my personal experiences working from home using Lync. I understand only the first 6-8 qualified respondents will be interviewed, and volunteering does not guarantee I will be interviewed.

Indicate your consent to participate in a personal interview by entering your email address in the box below:

In appreciation of your time completing the survey, I would like to offer you the opportunity to enter a draw for a chance to win a **$50 gift card**. The odds in favour of winning are approximately 1:100, assuming about 100 people complete the survey. Good luck!

Participate in the prize draw by entering your email address in the box below:

Appendix B Information Letter and Consent Form for Personal Interview

Study: Lync®-ing Telecommuters for Collaboration: Case Study of a Healthcare Organization

Investigator/researcher:	Supervisor:
J. Lenore Delday University of Alberta Faculty of Extension 10230 – Jasper Avenue Edmonton, Alberta T5J 4P6 (403) 783-7724 jdelday@ualberta.ca	Dr. Ann Curry, Professor University of Alberta Faculty of Extension 10230 – Jasper Avenue Edmonton, Alberta T5J 4P6 (780) 248-1110 ann.curry@ualberta.ca

Researcher will comply with the University of Alberta Standards for the Protection of Human Research Participants, http://www.uofaweb.ualberta.ca/gfcpolicymanual/policymanualsection66.cfm.

Background

You have been contacted because you indicated an interest in the interview portion of this study when you completed the online survey (Part A). You are being asked to participate in the interview portion of this study (Part B) as an AHS employee who is working from home at least 15 hours each week, and using the Microsoft Lync 2010 unified communications platform for communication and collaborative tasks.

Purpose of the Study

This study is exploring how effectively telecommuters are utilizing the unified communications system, Microsoft® Lync®, for communication and collaborative tasks.

The study is in partial fulfillment of the Master of Arts in Communications and Technology degree for J. Lenore Delday, and not initiated by Alberta Health Services.

Study Procedures

This interview segment of the study follows the survey segment (Part A) in which you have already participated. In-depth, semi-structured interviews will be conducted during May and June 2014.

Each semi-structured interview will be conducted via Lync videoconference and last 45 minutes to one hour. Interview questions will capture your personal experiences, opinions, attitudes and satisfaction level about Lync when working from home.

Interviews will be conducted using the Lync videoconferencing component. The interviews will be audio and video recorded, transcribed, and returned to you through AHS email for your verification. Please do your best to return your verification/permission email within a week's time.

Benefits

We hope the findings from this case study will add knowledge to the general field of software used in distributed work environments and inform ways to more effectively support the communication needs of home workers. The study may assist with the implementation and support of Lync for AHS employees working from home and inform a provincial AHS alternative work arrangement policy.

Risk

There is no foreseeable risk to your participation in the study.

Lync®-ing Telecommuters for Collaboration: Case Study of a Healthcare Organization

Voluntary Participation

You are under no obligation to participate in this study, and your participation is completely voluntary. AHS will not know who chooses to participate or not, in the study. If you choose to participate, you are not obliged to answer any specific questions, and you may change your mind and withdraw at any time by asking that the interview be terminated. Following the interview, you may ask to have any collected data withdrawn, destroyed and not included in the study by contacting the researcher up to five (5) days following verification/permission of transcribed data.

Confidentiality and Anonymity

All information collected will be coded to protect your privacy, anonymity, and confidentiality. Before submitting the final report from this study, any identifying indicators will be removed. Email addresses will be destroyed once personal interviews have been completed and the gift card draw has been made. Data will be kept in a secure place for a minimum of five years following the completion of the research project, and when appropriate, will be destroyed in a way that ensures privacy and confidentiality.

Other Uses

Resulting research may be used in published journal articles and for professional presentation (teaching and/or conferences), but no participants will be personally identified, and further use will be approved by a Research Ethics Board. The final project report will be a public document available on the University of Alberta library website. No other reports from the data will be compiled for Alberta Health Services.

Questions?

If you have questions, concerns, or complaints please contact:

Researcher: J. Lenore Delday, jdelday@ualberta.ca or (403) 872-8830
Supervisor: Dr. Ann Curry, ann.curry@ualberta.ca or (780) 248-1110

The plan for this study has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615. This office has no direct involvement with this project.

Participant Informed Consent

I acknowledge that the study procedures have been explained to me, and any questions I have asked have been answered to my satisfaction. I understand that personal interviews will be audio and video recorded. In addition, I know that I may contact the researcher designated on this form at any time for more information. I have been assured that personal records relating to this study will be kept confidential. I understand that I am free to withdraw during the interview at any time and will not be asked to provide a reason.

Date:

Participant Printed Name: **Investigator Printed Name:**

Participant Signature: **Investigator Signature:**

Appendix C Interview Script

1. Join online meeting.
    a. Hello X. Thank you for taking the time to meet with me and participate in my research study.
    b. Our interview will be recorded and last about 45 – 1 hour. You do not have to answer any specific questions.
    c. Do you have any questions before we begin?
    d. If you are ready to begin, may I start recording?

Begin RECORDING.

2. For my transcription purposes, please tell me your name.
    a. X, do you consent to this interview and being recorded?
    b. Please tell me where you are located and a bit about what you do in AHS.

Questions related to working from home

1. First, I'd like to learn how you became interested in working from home.
    a. How did you find out you were able to do this?
    b. Have you worked from home in a previous position with AHS, a former health entity, or externally?
    c. How long have you been working from home as an AHS employee?
2. What is it about working from home that appealed to you - what benefits did you hope to realize?
3. Were there any particular aspects about working from home you were concerned about?
    a. If so, how have you managed to overcome them?
4. Now that you made the decision and are working from home, how do you feel about it?
    a. Do you ever work outside of standard business hours and/or on weekends? What are your thoughts - is this an overall positive or negative for you?
    b. When working from home, you are physically absent from the office and your co-workers several days each week. How important is it to you, or not, that you have a presence in the workplace, either in person or online?
    c. Please describe any ways you have found working from home has changed your colleagues' attitudes towards you.
    d. What about your manager's attitudes towards you, or expectations of you?

Now I'd like to learn about the types of work tasks you do, particularly when working from home.

5. What is it about the type of work you do that makes it easy or difficult to work from home?

6. Describe to me your necessity to participate in the following different types of work tasks with others, and your needs and preferences for interacting with others inside and outside the organization - one to one and in groups:

Work Tasks	Needs	Preferences for interacting with others (Lync component(s))	
		One-to-one	Groups
a) Find or exchange information.			
b) Collaborate on a project, share or brainstorm ideas.			
c) Make decisions.			
d) Interact socially.			

My next questions relate to Lync and the type of work done from home. I'll ask for your opinions about the strengths and weaknesses of Lync.

7. Please describe how you became fully knowledgeable about Lync's capabilities and confident in your ability to apply them.
8. Lync provides components that enable you to communicate and collaborate with employees in ways you may not have before, like video recording, polling, IM, online meetings, program sharing, etc. Thinking about how you use one component, or a combination of components, for example presence and IM, or sharing your desktop during an online meeting, for doing your work from home:
    a. Please describe a work task or situation in which Lync enabled you to perform your job more efficiently and effectively.
    b. Please describe a work task or situation where using Lync hindered or negatively affected the outcome.
        i. What do you think could have improved this situation?
9. What would improve your overall experience working from home?

Finally, I'd like to ask your opinion about questions that could be particularly important to the organization.

10. How important do you think it is for employees that AHS implement a formal program for home workers, and why?
11. Overall, how do you think the Lync service could be improved?

That covers the things I wanted to ask. Is there anything you care to add?

What should I have asked you about working from home or Lync that I didn't think to ask?

Thank you