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NETWORK SERVICE ORGANISATION – INTERACTION IN WORKPLACE NETWORKS

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Abstract

In this doctoral dissertation, various widely understood disciplines of facilities and business support functions are integrated into one concept 'workplace network' that consists of the network actor roles of service providers, contract managers, and the end-users of services. There is a limited understanding of the business networks behind the structures of workplace networks.

In this doctoral dissertation, a modified grounded theory of interaction and cooperation of workplace networks is generated. The dissertation integrates six scientifically reviewed research papers that focus on generating, testing and refining a theory of interaction in workplace network management. The main focus of the dissertation lies in answering the question: "How can workplace networks improve their interaction and cooperation?"

A modified grounded theory is used in the dissertation as a research strategy for integrating data analysis from three research phases. During these phases, a grounded theory of network service organisation interaction is generated, tested, and refined. The general analytic strategy is based on multiple triangulation methods, such as coding and network analysis. The first phase conceptualises a novel theoretical framework of network service organisation which extends the previously developed paradigm models of CRE and FM as well as provides a different means to assess social networks behind the complex environment. The second phase tests the qualities of the framework and explores the qualities of the workplace network interaction and cooperation in four pilot study environments. In the third phase, a final case study is conducted for refining the qualities of a theory of network service organisation in Finnish real estate owner organisation. The research process is based on interpretivisms and hermeneutics and abductive reasoning. The empirical data collection is mainly based on interviews during the three phases.

The results provide understanding of the workplace network roles and imply new insights on workplace network interaction and cooperation. The results suggest that the network members responsible for workplace network management should create more organised forms of formal interaction in order to strengthen the multi-level cooperation within their business relationships.

Keywords: Workplace network, network service organisation, grounded theory, case study.

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Työn ohjaaja	Apulaisprof. Jouko Toivonen (Turun kauppakorkeakoulu).

Tiivistelmä

Tutkimus kohdistuu kiinteistöliiketoimintaan ja sen toimitilapalvelutuotannon muutokseen. Niin strategisen (CREM) kuin operatiivisen (FM) toimitilajohtamisen kirjallisuudessa on havaittu eri osapuolien välisen vuorovaikutuksen merkitys muuttuvissa toimintaympäristöissä. Tutkimuksen työympäristöverkostot (engl. workplace networks) koostuvat toimitilojen käyttäjistä, omistajista ja toimitilapalveluntuottajista. Tutkimuksessa luodaan teoria työympäristöverkostojen osapuolten muodostaman ”verkottuneen palveluorganisaation” (network service organisation) vuorovaikutuksesta ja yhteistyöstä.

Tutkimus koostuu yhteenveto-osasta ja kuudesta julkaistusta artikkelista. Tutkimuksen pääkysymyksenä on, miten työympäristöverkostot voivat parantaa vuorovaikutustaan ja yhteistyötään. Tutkimuksen pääkysymys on jaettu osatutkimuskysymyksiin, joihin vastataan kolmen tutkimusvaiheen avulla. Tutkimuksen ensimmäisessä vaiheessa luodaan teoreettinen viitekehys, jonka avulla kuvataan verkottuneen palveluorganisaation osapuolia ja vuorovaikutussuhteita. Pilottitutkimusvaiheessa (pilot study) testataan ensimmäisessä vaiheessa luotua viitekehystä ja tutkitaan työpaikkaverkoston organisaatioiden välistä vuorovaikutusta ja yhteistyötä neljässä työympäristöverkostossa. Kolmannen tutkimusvaiheen tapaustutkimuksessa (final case study) selvitetään, miten tulisi johtaa kiinteistönomistajaorganisaation toiminnan ympärille muodostunutta työympäristöverkostoa. Työympäristöverkoston strategista vuorovaikutusta tutkitaan työympäristöverkoston toimijoiden, eli palveluntuottajien, kiinteistönomistajan ja toimitilapalveluiden käyttäjäorganisaatioiden välillä.

Tutkimus on laadullinen, ja siinä on käytetty teoriaa kehittävän tapaustutkimuksen lähestymistapaa (grounded theory). Tutkittavasta ilmiöstä on kerätty aineistoa useilla menetelmillä. Tutkimuksen eri vaiheisiin on osallistunut useita tutkijoita, ja siinä on käytetty useita aikaisemmista tutkimuksista muodostuvia teoreettisia viitekehyksiä. Tutkimuksen kolmen vaiheen tulosten perusteella esitetään seuraava hypoteesi verkottuneista palveluorganisaatioista: hajautuneet työympäristöverkostot, joilla on virallisia vuorovaikutusmekanismeja ja yhteistyömuotoja, ovat kyvykkäämpiä ja siksi mukautuvampia asiakkaiden ja liiketoimintaympäristön vaatimuksille kuin sellaiset työpaikkaverkostot, joilla ei ole vastaavia mekanismeja. Tutkimuksen lopuksi esitetään ehdotuksia myös työympäristöverkostojen yhteistyön kehittämiseksi käytännössä.

Avainsanat: Työympäristöverkosto, toimitilajohtaminen, toimitilapalvelut ja kehittävä tapaustutkimus.

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In Helsinki, August 8th 2005,

LIST OF APPENDED PAPERS

This dissertation of doctor of science in technology summarizes the following publications.

Paper 1.
Tuomela, A. (2003). Tracing workplace knowledge in 'network service organisations'. Journal of Facilities Management. Vol. 2 No. 2, pp. 160-174.

Paper 2.
Revised and published first as: Tuomela, A. and Salonen, A. (2003). Network Service Organization – a Multiple Pilot Study. The European Facility Management Conference – proceedings 2003, Rotterdam, The Netherlands.

Revised and published again as: Tuomela, A. and Salonen, A. (2005). Network Service Organization – a Multiple Pilot Study. Facilities, Vol. 23 No. 3/4, pp. 128-141.

Paper 3.
Tuomela, A. (2004). Governance of Network Organisations from the Building Owner's Perspective. Nordic Journal of Surveying and Real Estate Research, Vol.2:2, pp, 10-30.

Paper 4.
Tuomela, A., Heimburger, M., Nummi, J. and Toivonen, J. (2005). Interaction in a Building Owner Centred Network - Case Study. Facilities, Vol. 23, No. 9/10, pp. 373-392.

Paper 5.
Tuomela, A. and Toivonen, J. (2004). Developing Strategic Workplace Management with Network Analysis. The European Facility Management Conference – proceedings 2004, Copenhagen, Denmark.

Paper 6.
Tuomela, A. (2005). Interaction in Workplace Networks - Grounded Theory Building in Facilities Management Research. Facility Management 2005 Conference – proceedings 2005, Frankfurt Am Main, Germany. 19-21 April 2005.

Contribution of the author to Papers from 1 to 6 is as follows:

Paper 1. The author of this dissertation is fully responsible for writing this paper.

Paper 2. The author is responsible for initiating this paper. The network analysis and writing the text was the result of cooperation with Mr. Anssi Salonen and the author.

Paper 3. The author of this dissertation is fully responsible for writing this paper.

Paper 4. The author is responsible for initiating this paper. The network analysis and writing the text was the result of cooperation with Mr. Markku Heimburger, Mr. Juha Nummi, Dr. Jouko Toivonen and the author.

Paper 5. The author is responsible for initiating this paper. The network analysis and writing the text was the result of cooperation with Dr. Jouko Toivonen and the author.

Paper 6. The author of this dissertation is fully responsible for writing this paper.

TABLE OF CONTENTS

ABBREVIATIONS

AM	Asset Management
BIT	Business, Innovation and Technology Research Center at HUT
CEM	Construction Economics and Management
CRE	Corporate Real Estate
CREM	Corporate Real Estate Management
FM	Facility Management
HR	Human Resources
HUT	Helsinki University of Technology
IT	Information Technology
KPI	Key Performance Indicator
NO	Network Organisation
PM	Property Management
SLA	Service Level Agreement
SP	Service Provider

1 INTRODUCTION

1.1 Background

At a time of fundamental change in the public sector and the corporate world, the recognition of the role of facilities management in business performance has gradually grown. Corporate strategies for competitiveness, core business, customer responsiveness and the continual improvement of quality have demanded a complete rethink of all processes and restructuring on an unprecedented scale. Pressure for rationalising the business, reducing costs and improving flexibility has led to the developing of innovative approaches to managing the facilities and services that support the business. (Alexander, 2004) Moreover, this fundamental change has increased the needs of interaction and cooperation among the parties involved in the business support and workplace issues. Therefore, a need to study interaction and cooperation in networks under these fundamental changes has emerged from an academic perspective.

A demand for continuous communication with the core business customers and the integration of strategic and operational planning have been a popular topic in the literature on both strategic corporate real estate management (CRE) (Joroff et. al, 1993; Lambert et. al, 1995, 1999) and the more operational facilities management (FM) (Alexander 1994, 2004; Barrett, 1995, 2000; Then, 1999, 2003). There is a growing need to raise the awareness at senior management levels of organisations of the contributory role of operational facilities. In spite of recognising the need for interaction and cooperation between the senior management of building user organisations and the people and organisations providing facilities and services, there have been few studies that analyse interaction and cooperation in the given settings.

The existing organisational structures of facilities and property management tend to repress the need for the integration of the strategic, operational, and structural dimensions of different functions and the general need to view issues regarding property and workplace broadly (Pitt and Hinks, 2001). The responsibility for purchasing support services is often scattered among CRE, human resources (HR), or information technology (IT) departments (De Swart, 1995; Lambert et. al, 1999; Young, 2001), which causes functional ‘silos’ in service management (Bogle, 1999).

In this dissertation, an emerging term ‘workplace network’ is used to describe the cooperational network of several core business support functions such as corporate real estate management, facilities management, property management and different out-tasked services. It has been noted that the facilities management environment consists of

the network actor roles of service providers, building owners as contract managers, and the end-users of services (Brackertz and Kenley, 2002a, 2002b; Bröchner, 2003; Kadefors and Bröchner, 2004). The cooperation of these emerging roles resembles interaction of network organisations (Miles and Snow, 1992; Baker, 1992) rather than independently managed business support functions.

Interactions, relationships and networks are increasingly important for understanding how business is conducted as major changes have occurred with respect to the growth of information technology, increased globalisation, the changes in structure of industry, and increased customer expectations (Leek, et al., 2003). In recent years, the volume of social network research has increased radically in management, as it has in many disciplines. The boom in network research is part of a general shift, beginning in the second half of the 20th century, away from the individualist, essentialist and atomistic explanations toward more relational, contextual and systemic understandings. (Borgatti and Foster, 2003)

Networks are, in many cases, studied through firms that have somehow become central in the network. These centrally acting firms are commonly known as ‘focal firms’ (Gadde and Håkansson, 2001, pp. 57-117; Möller and Halinen, 1999; Tikkanen, 1998), ‘central firms’ or ‘hub firms’ (Jarillo, 1998; Piercy and Cravens, 1994). In this dissertation, workplace networks are studied in three phases. In the first phase, a network service organisation framework is generated. In the second phase, four pilot case networks are studied. In the third phase, a final case study is conducted at Senate Properties that operates as a focal firm pursuing to manage the interaction between the members of workplace network organisation.

1.2 Research Problem and Questions

The research process is divided into three research phases where a modified grounded theory is generated, tested, and refined. This dissertation focuses on describing the following comprehensive research problem: *How can workplace networks improve their interaction and cooperation?* This overall research problem can be divided into individual sub-problems that are based on the research questions presented in the appended papers.

The first phase titled “Theoretical framework” conceptualises a novel theoretical framework of network service organisation which is inductively generated from data yielded by interviews and extended from the previously developed paradigm models of CRE and FM and which provides a different way to assess social networks behind the complex environment. The ‘network service organisation’ framework focuses on

explaining *who are the different members and what are their roles in the workplace network.* The inductive data analysis, based on selective coding, presents the dimensional proposals effecting interaction between the workplace network members of end-users, contract managers and service providers (see Paper 6). The different members and roles of the workplace network are presented in paper one that is based on a literature review synthesis. A generic governance model for network cooperation is introduced. The theoretical framework aims to increase knowledge about understanding and managing network relations in the defined workplace environment.

The second phase titled “Pilot study” tests the qualities of the generated framework and explores the features of the workplace network interaction and cooperation in four pilot study environments (Paper 2). The purpose of this pilot study is to explore by means of network analysis *how the different workplace networks are connected.* In the framework of the pilot study, network analysis involves a business unit level analysis with the objective to determine where the pilot study environments have multiple connections and business units for interaction. In the pilot study, the “network organisations” are composed of nodes and links with formal and informal (Baker, 1992; Nadler, 1992; Krackhardt and Hanson, 1993) as well as vertical and horizontal (Grönroos, 1996) connections. A network organisation can be viewed as a cluster of firms or specialised units coordinated by market mechanisms instead of a strict chain of command (Miles and Snow, 1992; Robbins, 1994; Tseng et al., 2002) (see Paper 2). The pilot study demonstrates proposals, plans for data collection, and relevant lines of questioning for the final case study on the basis of the connections discovered in the four different workplace networks environments. Along with the network analyses of pilot cases, a data analysis based on axial coding is conducted on the workplace network roles identified in the first phase (Paper 6).

The third phase titled “Final case study” is a single case study conducted in order to refine the qualities of the theory of network service organisation interaction. The network service organisation around a Finnish real estate owner organisation, Senate Properties is studied with the aim to explain *how to manage workplace network interaction of triadic alliance relationships.* The objective is to explore and explain the strategic interaction between workplace network actors: service providers, contract managers, and end-users of workplace services. Two network analyses are conducted at Uusimaa regional tax office located in the building owned and managed by Senate Properties (Papers 4 and 5). The network analysis is carried out from an egocentric network perspective (see Johansson et al., 1995, pp. 23-36) at Senate Properties, a Finnish building owner. In the final case study, the position of Senate Properties as a long-term strategic centre is analysed through the mutual needs for developing interaction between the actors in the workplace network. These centrally-acting firms

are commonly known as ‘focal firms’ (Gadde and Håkansson, 2001, pp. 57-117; Möller and Halinen, 1999; Tikkanen, 1998), ‘central firms’ or ‘hub firms’ (Jarillo, 1988; Piercy and Cravens, 1994) or ‘intermediary firms’ (Havila, 1996; 2003).

In addition to the two network analyses, a data analysis on selective coding is presented based on the core category of joint strategy alignment (Paper 6). In the final case study, the core category of joint workplace network strategy building was chosen as the category of data collection and analysis. Senate Properties was a natural choice for the final case study environment since the author of the dissertation joined the company to work as a development manager responsible for the development of service and partnership networks. Senate Properties is a Finnish government-owned enterprise responsible for managing the property assets of the Finnish state and for letting premises.

1.3 Research Approach and Methods

The methodological objective of this dissertation is to reveal how the style of qualitative research known as the 'modified grounded theory approach' (Perry and Jensen, 2001; Axelsson and Goldkuhl, 2004) was applied in three research phases and in several research projects generating a theory of “interaction and cooperation of network service organisations”. Several workplace networks are empirically explored with multiple data collections, analysis methods and background theories. The general analytic strategy of this dissertation is multiple triangulations that integrate empirical and theoretical information to the grounded theory. The research is based on interpretivism (Burrell and Morgan, 1979), hermeneutics (Gummesson, 1991, p. 62) and abduction (Peirce, 1931-1935, 1982) as an iterative process, whereby the three stages of the research provide us with knowledge about “*how can workplace networks improve their interaction and cooperation”*.

The empirical research was mainly conducted during 2000–2004 although some data included in the analysis were gathered in research projects conducted in 1996–2000. The dissertation contains several varying research methods depending on the research problem and the maturity of the research phase. Even though the dissertation is composed of six articles, the overall research contains a heuristic process of grounded theory (Glaser and Strauss, 1967) and a theory building from case studies (Eisenhardt, 1989). The theory is built through multiple studies that all contain phases of research design, data collection, data analysis, literature comparison and reporting findings. The validity of the research is ensured by multiple triangulation methods. The dissertation will introduce a new environment of analysis for investigating workplace network interaction in Finnish workplace network environments.

1.4 Scope and Definitions of Research

For the purpose of the included studies, the terms ‘Workplace Network ‘ and ‘Network Service Organisation’ were developed in order to describe the changed management environment of facilities and other support functions. During the last few years the workplace issues have received increased scholarly attention.

A decade ago the facilities, property, corporate real estate and other management schools handling corporate support issues were considered separate. Today, the workplace topics (see Joroff and Bell, 2001) are considered more integrated and also connected to other business support functions such as human resources (HR), and information technology (IT). Therefore, *workplace network* is defined in this dissertation as a cooperational network of several core business support functions such as corporate real estate management, facilities management, property management and different out-tasked services.

In this dissertation, cooperation is defined as the association of people or businesses with the aim to benefit business support or the workplace network. Network relationships can be justified by referring to diverse theoretical backgrounds. The interaction in the pilot study phase is mainly focused on social interaction between the people and the organisations representing different functional units in four pilot studies (Paper 3). During the theoretical framework conceptualisation and exploration in the pilot study, the *network organisation* is defined *as a cluster of firms or specialised units coordinated by market mechanisms instead of a strict chain of command* (Miles and Snow, 1992; Robbins 1994; Tseng et al., 2002).

In the final case study at Senate Properties, the term ‘interaction’ (Håkansson, 1992; Möller and Wilson, 1995) is adopted to refer to exchange processes and the formation of relationships between the organisations and the people representing them. In this dissertation, network organisation is defined differently in different research phases. In the descriptive final case study phase, the *network organisation* is defined, similar to Achrol’s and Kotler’s (1999) definition, *as an interdependent coalition of task- or skill-specialised (social) and economic entities, independent firms, or autonomous organisational units that operates without hierarchical control but is embedded, by means of dense lateral connections, mutuality, and reciprocity, in a shared value system that defines "membership" roles and responsibilities*. The changing definitions are based on the maturity and the scope of each research phase.

In general, the *Network Service Organisation* of this dissertation is defined as *a social, technical, and business network that is integrated across functional business support*

boundaries affiliated by shared management purposes and decentralised business unit-specific customer information.

1.5 Structure of the Dissertation

This doctoral dissertation comprises six separate papers. All papers have been prepared and scientifically reviewed to meet the requirements of the specific publications and conferences for which they were intended. The separate papers represent the reported findings of the three research phases: theoretical framework, pilot study and final case study (Figure 1). Each phase and article has a different topic and research questions. In general, in this dissertation, the systematic approach is based on building modified grounded theory based on case studies. The applied research methods are qualitative. They entail varying methods of data collection and analysis, as well as validate the general research findings differently.

The subsequent chapters present aspects of the overall research process. The overall methodological issues of the research process are discussed in chapter two with science philosophy, grounded theory, case study, data collection and analysis considerations. Brief summaries of the key results of each phase are presented in chapter three. In chapter four, the saturation of the results is incorporated. Finally in chapter five, the overall research process is discussed and concluded with methodological insights, theoretical and practical contributions, transferability and issues for further research.

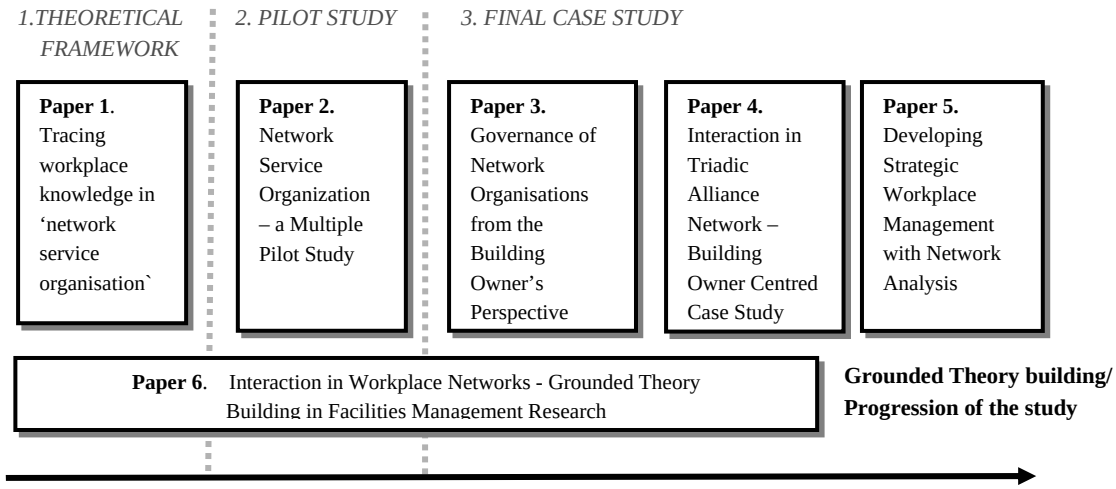

Figure 1 Phases and papers of the dissertation

2 METHODOLOGY

2.1 Research Approach

The research of this dissertation is concerned with interaction and cooperation improvement in workplace networks. The networks and network organisations in the corporate real estate and facilities management organisations are an unexplored area of research. In general, there seems to be no common agreement among researchers on the principles, or conventions, for drawing or illustrating networks nor has it been agreed upon how to determine what networks are like simply because there is no general understanding on what constitute the network nodes, *e.g.*, firms, business units, individuals, and the links between such network nodes, *e.g.*, flows of products, services, money and information (New and Mitropoulus, 1995). As Charan (1991) describes, networks and network organisations constitute a subjective area of research. In addition, there seems to be no general agreement among researchers on how to conduct research on networks, *e.g.*, what research methods to use or on what level of analysis research should be carried out (O'Donnell et al., 2001).

According to Gioia and Pitre (1990, p. 585), there are fundamental assumptions in organisational research where ontology concerns the nature of organisational phenomena, epistemology is the nature of the knowledge about the phenomena and methodology is the nature of ways studying these phenomena. The ontological perspective of this dissertation is interpretivism of multiple specific organisational network realities studied from an epistemological stance that perceives social network and workplace management (CREM and FM) theories as integral activities.

In the organisational sciences, there are essentially four paradigms a researcher may consider in conducting an empirical examination: functionalist, interpretive, radical humanist, and radical structuralist (Burrell and Morgan, 1979). Of these four, the two most common are the functional paradigm and the interpretive paradigm. According to Corley (2002, p. 25), the essential difference between functionalist and interpretive research is found in the ultimate goal of the analysis. For functionalists, that goal is replication; data should be collected and analysed in such a way that another researcher collecting and analysing similar data under similar conditions will find similar results. For interpretivists, replication is not the goal. Instead, what is important is that the results are representative of the interpretations of those experiencing the phenomenon under study and that they embody a plausible interpretation of the phenomenon. Thus, the important criterion for assessing interpretive data analysis is its ability to provide reasonable and plausible insight into a phenomenon so that a deeper understanding of the phenomenon may be gained. The empirical examination of this dissertation is based

on the interpretive perspective aiming to provide reasonable and plausible insight into the phenomena of interaction and cooperation within the studied workplace networks.

According to Gummeson (1991, pp. 15-17,) there are two main different perspectives within the theory of science, the positivistic (similar to functionalistic) and the hermeneutic (similar to interpretivitic). The positivist paradigm advocates that the world is objective and apprehensible, and there exists an absolute truth, whereas the hermeneutic paradigm regards the world as a construction and seeks to understand phenomena instead of explaining them. The positivistic paradigm is based on the ideals of natural sciences. Positivistic researchers maintain a distance between themselves and the studied object. However, the paradigm is governed by explicitly stated theories. Hermeneutics, on the other hand, aims at achieving understanding. The hermeneutic paradigm emerged in the late nineteenth century as a different philosophical understanding of reality (Taylor, 1985). The hermeneutic researchers claim that there is a difference between explaining the natural world and understanding or interpreting society.

This dissertation comprises six individual papers and several research projects that had different aims and settings for research. The general objective of the research is to achieve a profound understanding of a workplace network's interaction and cooperation. In order to make positivistic generalisations of or average and representative investigations on chosen network samples, the researcher should use the quantitative methods for inquiry. According to Gummesson (1991, pp. 1-3), the use of quantitative methods enables the researcher to pinpoint only a few characteristics of each phenomenon. The purpose of this study is to explore and describe many aspects of an incomprehensible phenomenon.

Many exchange theories of organisational behaviour sciences (Homans, 1950; Blau, 1964; Adams, 1965) argue that the structure of an organisation can be understood if we adequately understand the elementary social behaviour of the organisation. The growing acceptance of behavioural research in the field of property has provided real estate research with a new way of considering its subject (Fleming, 2004, p. 40). While this dissertation explores the main research question "*How can workplace networks improve their interaction and cooperation?*", the dissertation focuses on both the social and the business network aspect of organisation in the facilities management environment.

According to Gummesson (1991, pp. 14-18), the understanding is never objective; every case in society is unique and cannot be subordinated. Instead, understanding always takes a standpoint in the individual or subject in order to generalise the results. Researchers usually utilise a combination of the different approaches. The completed

research concentrates on description and explanation. Instead of trying to explain casual relationships by means of objective 'facts' and statistical analysis, hermeneutics uses a more personal interpretation in order to understand the reality.

2.2 Building the Modified Grounded Theory of Three Research Phases

2.2.1 Modified Grounded Theory Approach

The hermeneutic learning process of this dissertation is rooted in a modified grounded theory approach (Perry and Jensen, 2001), which is also called adopted grounded theory (Sarker et al., 2001) or multi-grounded theory approach (Axelsson and Goldkuhl, 2004), where information collected in multiple research phases is used in the theory building. The general purpose of grounded theory studies is to explore and understand how complex phenomena occur (Glaser, 1978, 1992; Strauss and Corbin, 1990, 1998). Nevertheless, two methodological schools of scientific reasoning have emerged from the original "grounded theorists", both of which have been criticised (Douglas 2003, 2004). Glaser's purely inductive approach (Glaser, 1978, 1992) has been criticised for the lack of clarity and precision in defining the methodological procedures or steps required of the researcher in correctly undertaking the process. On the other hand, Strauss and Corbin's inductive and deductive reasoning has been criticised for the operational procedures prescribed by the author's implicit application of prior knowledge.

The general grounded theory approach is understood as pure inductive research (Perry and Jensen, 2001). In this dissertation, the term modified grounded theory is used in order to elaborate the inductive and deductive theory generation from the pure inductive theory building. In practice, research often necessarily includes elements of both deduction (theory-testing) and induction (theory-generation) (Perry, 1998; Patton, 1990).

The modified grounded theory approach has also been called the quasi-inductive approach (Jensen 1998) and abduction (Alvesson and Skjoelberg, 1994). According to Perry and Jensen (2001), modified grounded theory helps the researcher to be initially aware of a number of dimensions of the phenomenon to be studied. Furthermore, it can give the researcher a "flying start" to the study. The dimensions are not included to perform verifying, or theory-testing, upon; rather, they are merely "put on trial" within a real empirical context for contextual re-specification, refinement or elimination. Dimensions that do not "work" or "fit" the data are excluded during the process of data analysis and new discovered dimensions are added. The openness of the researcher towards new dimensions other than the pre-categories is fundamental. Abduction was

suggested over a century ago by the American philosopher Charles S. Peirce as a reasoning mechanism underlying imaginative and creative thought (*c.f.* Peirce, 1931-1935, 1982-). According to Coffey and Atkinson (1996, pp. 155-156), abduction involves a repeated interaction of existing ideas, former findings and observations, new observations and new ideas. Abductive approach is thus especially appropriate for qualitative work, in which an open-minded intellectual approach is normally advocated.

According to Perry and Jensen (2001), it is unlikely that any researcher could genuinely separate the two processes of induction and deduction - "both are always involved, often simultaneously," and "it is impossible to go theory-free into any study" (Richards, 1993, p. 40) - that is, all data are theory-loaded (Popper, 1972). For example, Miles and Huberman (1994, p 17) conclude that induction and deduction are linked research approaches, although trade-offs might be made between "loose" and "tight" initial frameworks. That is to say, some prior theory may have a pivotal function in the design of a research project (Parkhe, 1993).

According to Glaser and Strauss (1967), theoretical sensitivity is a key concept in grounded theory building and it is said to result of a deep understanding of the empirical material, as well as the researcher's ability to understand data and see connections and new dimensions in it. In grounded theory, the researcher is expected to make visits to the field to collect data until the categories found through analysis are saturated (Robson 2002, p. 192). As in many grounded theory studies (Sarker et al., 2001; Brown et al. 2002; Wilson Scott, 2004; Mäkelä, 2004), the data analysed in this study is collected from several resources at different points in time. The data analysis is conducted using modified (Perry and Jensen, 2001), which is also called adopted (Sarker et al., 2001) or multi- (Axelsson and Goldkuhl, 2004), grounded theory approach where information collected from three research phases is used in the theory building.

Glaser and Strauss (1967) allow information from any domain for a starting point. From the perspective of grounded theory, all acquired information segments, whether from formal scientific literature or the in the form of notes from informal conversations, can be treated as an equal contribution to the discourse. These segments of information may be continuously sampled, coded, and compared with each other using the constant comparative method (Strauss and Corbin, 1998). Perry and Jensen (2001) argue that starting from scratch with an absolutely clean theoretical slate is neither practical nor preferred. They define the combination of induction and deduction as modified grounded theory where data analysis is periodically performed during the data collection processes.

The abduction, consisting of both induction and deduction, takes place during the three research phases of this dissertation. Gioia and Pitre (1990) define theory building as a process or a cycle by which such presentations are *generated, tested, and refined.* In this study, the data collection and analysis is divided into three phases: (1) generation of the theoretical framework of the network service organisation; (2) exploratory pilot study testing the framework; and (3) descriptive final case study refining the theory (Figure 2). Each phase has different ways of combining the field data and the theories relating to other contexts as the study proceeds. The overall process is based on cyclical elements of both induction and deduction, which is also called abduction.

In this dissertation, the theory is built through a heuristic learning process (Gummesson, 1991, p. 61) involving multiple studies that all include phases of research design, data collection, data analysis, literature comparison and reports on findings. The presented research process aims to explore and explain a complex workplace network environment and the phenomenon, to make the subject matter understandable, and to develop a new theory inductively from the material that corresponds with the reality. The deductive proposals at the end of each phase were mainly based on the critical reflection on collected data and empirical statements, and they were compared with existing theories with literature reviews. Moreover, during the deductive research phase, conceptual refinements as well as ontological, epistemological and linguistic determinations were carried out. The research results and reports were rendered more understandable with deductive checks and peer debriefings (see Strauss and Corbin 1990, p. 37).

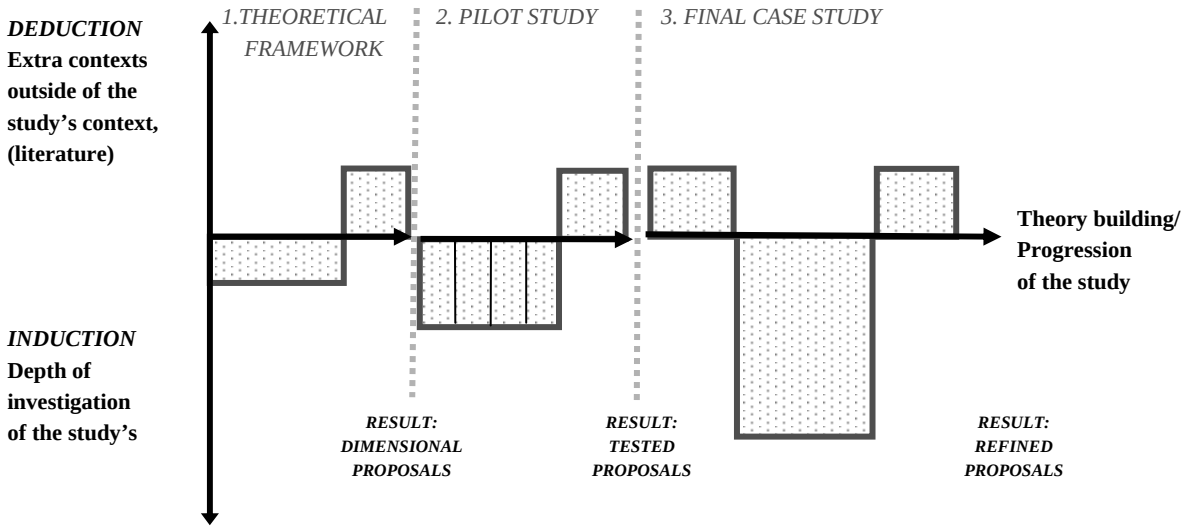

Figure 2 Process of grounded theory building in three research phases

Strauss and Corbin, (1998, p. 12) define grounded theory as a theory that was derived from data systematically gathered and analysed through the research process. A researcher does not begin a project with a preconceived theory in mind; rather, s/he starts with an area of study and allows the theory to emerge from the data. Data collection and analysis are consciously combined, and initial data analysis is used to shape the continuing data collection. This is supposed to provide the researcher with opportunities to increase the "density" and "saturation" of recurring categories, as well as to assist in providing follow-up procedures with regard to unanticipated results. Interlacing data collection and analysis in this manner is also designed to increase insights and to clarify the parameters of the emerging theory. At the same time, the method supports the actions of initial data collection and preliminary analyses before attempting to incorporate previous research literature. This is supposed to guarantee that the analysis is based on the data and that pre-existing constructs do not influence the analysis and/or the subsequent formation of the theory. If existing theoretical constructs are utilised, they must be justified in the data. In the course of this research, each phase worked as a preparation for the next phase, which aimed to extend the previously developed proposals towards a final theory until a saturation of the results was inevitable.

2.2.2 Building Grounded Theory from Multiple Case Studies

A case study approach is often used in social sciences and organisational research, but it has not always been recognized as a proper scientific research method (Yin, 2003). In this research, the case study method was chosen because workplace networks are open and complex systems (see Robson, 2002) and the studied phenomenon of interaction and cooperation is in its real-life context, and the boundaries between the phenomenon and the context are not clearly evident (Yin, 2003).

The case-study methodologies have achieved a growing acceptance as a means of deriving grounded theory, drawing inferences on causal relations, and isolating holistic regularities of organisation phenomena (*c.f.* Koza and Lewin, 1999; Corley and Gioia, 2004). The grounded theory approach has been increasingly used in the research of inter-organisational networks. Grounded theory and case study methodology has been used in studies on, for example, network alliances (Koza and Lewin, 1999), virtual teams (Maznevski and Chudoba, 2000; Sarker et al. 2001; Pauleen, 2004), value creation in business relationship networks (Ulaga, 2003), business-to-business networks (Beverland and Lockshin, 2003), partnership networks (Alexander et al., 2003), network position in R&D projects (Smith-Doerr et al., 2004), buyer-supplier network relationships (Carter et al., 2004), network service offering and outsourcing (Smith and Kumar, 2004).

The data analysed in this dissertation is collected form several case environments. In this dissertation, Eisenhardt's (1989) inductive methodological model, on grounded theory, is used to combine grounded theory and case study methodologies to generate a theory based on emerging empirical data. Therefore, the primary research strategy is grounded theory research which suits well for identifying the qualities of a theoretical framework. However, the main method of inquiry is the case study approach. To confirm or disconfirm the theoretical framework of Network Service Organisation, the case research methodology was used (Yin, 2003).

In general, the case study approach is a natural choice for the present dissertation – for the exploration and description of the network service organisation. Case study is common in situations where the purpose is to find answers to 'how' and 'why' questions, focusing on understanding the dynamics present within single settings (Yin, 2003. p. 18; Eisenhardt, 1989, p. 534). Yin (1989, p. 23) defines the case study method as an empirical inquiry that "investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used". It has also been stated that case studies seem to be valuable in research settings that delve in depth into complexities and processes, concentrate on unknown innovative systems and aim at revealing informal and unstructured linkages and processes in organisations (Marshall and Rossman, 1989).

According to Yin (2003), a case study can be exploratory, descriptive or explanatory. The boundaries between exploratory, descriptive and explanatory case studies are not always clear-cut (Tellis, 1997). The research process of this dissertation starts with the exploratory case study approach where the framework of the study is created ahead of time and pilot studies are used in determining the protocols and aims to guide the development of research questions and proposals that will be used in the final case study. In the final case study, the purpose is similar to an explanatory case study where, in very complex and multivariate cases, the analysis makes use of pattern-matching techniques with multiple triangulation methods in pilot and final case studies (Tellis, 1997).

All three phases of the dissertation followed five analytic (and not strictly sequential) stages of research design, data collection, data ordering, data analysis, and literature comparison (Eisenhardt, 1989; Pandit, 1996). According to Eisenhardt (1989), this theoretical approach generates both creative insights and empirical validity, while also allowing for scientific verifiability through re-testing. In general, the inductive case study process is highly iterative and is tightly linked to the gathered data. The theory

generating method approach is appropriate for use in new topic areas, as in exploration and description of workplace networks. The theories resulting from process are considered novel, empirically valid, and testable. The key criteria for evaluating this type of research are frame breaking insights, tests of a good theory, and convincing grounding in evidence.

According to Yin (2003), the theory generation does not require a large number of cases. One case may be used to generate conceptual categories, and a few more cases used to confirm the indication. In grounded theory building, the researcher's job is not to provide a perfect description of an area, but to develop a theory that accounts for much of the relevant behaviour (Glaser and Strauss, 1967, p. 30). This means that any case study option can be used for grounded theory purposes as long as the built theory accounts for much of the relevant behaviour. In this dissertation, the theoretical framework is created prior to the data collection and multiple exploratory case studies are chosen for the second pilot study phase. Along with exploring the interaction and cooperation of workplace networks, the aim was to put the developed framework "on trial". Because of the novelty of the combination of the research topic and the environment, a pilot study with four cases was chosen appropriate before conducting an in-depth single case study. The multiple pilot studies were used as patchwork case studies (Jensen and Rodgers, 2001, pp. 237-239) where a set of multiple case studies of the same research entity is intended to provide a more holistic view of the dynamics of the research subject.

From the tentative perspective of the research problem, "How can workplace networks improve their interaction and cooperation?", the conducted single final case study at Senate Properties served mostly as an instrumental case (Stake, 1995, pp. 2-4). The case serves as an instrument for answering the research question of how organisations and managers developing workplace network interaction can improve their interaction and cooperation.

Gummesson (1991, p. 61) describes understanding as a hermeneutic spiral, an iterative process, whereby each stage of our research provides us with new knowledge. The hermeneutic spiral is connected to the concepts of both qualitative and inductive research approach. It is based on certain starting points and returns to them in order to realise and understand them. The important characteristic of each cycle is that the researcher plans before acting, and reflects on the findings and the method after acting. The research conducted within the scope of the dissertation is comparable to the hermeneutic spiral (Figure 3) where theory is built of different levels of understanding of the research subject, *i.e.* the workplace networks and the network service organisation.

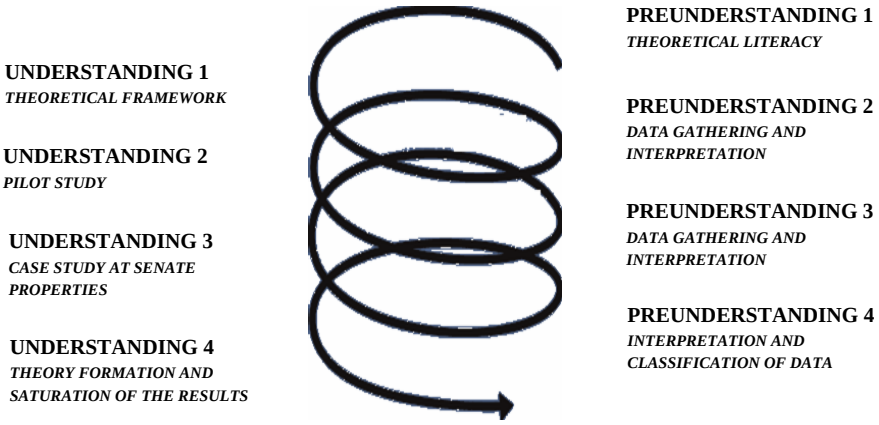

Figure 3 The Hermeneutic Spiral – Illustrating the research process (applied from Gummeson, 1991, p. 62; Syrjälä et. al, 1994, p. 125)

The theory building described by Eisenhardt (1989) in this dissertation is a result of a hermeneutical spiral, where certain starting points of understanding and returns reflect on the findings and the methods after acting. All three phases of the research process involve different phases of pre-understanding and understanding the following individual phases including literature reviews, data collections, interpretations, data analysis, and drawing conclusions. Understanding in each research phase was based on the pre-understanding of the prior research phase.

2.3 Data Sources and Methods

2.3.1 Multi-methodological Data Collection

In this dissertation, the primary source for inductive reasoning are the interviews conducted during the three research phases. However, in addition to the interviews, the database was build from focus groups, observations and documentary analysis in order to follow the general three principles of conducting case studies: (1) using multiple sources of evidence; (2) building up a case study database; and (3) maintaining the chain of evidence between theory, data and interpretation (Yin, 2003, pp. 97-106).

In this exploratory dissertation, the multi-methodological approach data collection means that each case network is expected to reflect different configurations of scale, geographical coverage, objectives, and stakeholders. The collected case data will be drawn from both primary sources (*e.g.* interviews with key stakeholders) and secondary sources (*e.g.* documents and observations). The reason for using multiple data collection methods is that the information is supplemented by other methods should some goals not be reached using a certain method. This dissertation relies on the interviews as the main source of data, with the observation and documentation data serving as important

triangulation and supplementary sources for understanding the events and their presentation to various constituencies and discrepancies among informants, and as a means of gaining additional perspectives on key issues (see Jick, 1979; Miles and Huberman, 1994; Corley and Gioia, 2004).

The multi-methodological approach to data collection used in this dissertation is justified by several authors of qualitative research methodology. Authors and researchers working in organisations and with managers argue increasingly that one should attempt to mix methods to some extent, because it provides more perspectives on the phenomena being studied (Easterby-Smith et al., 1991, p. 31). According to Yin (2003), Stake (1995) and Burgess (1991), good sources of evidence in qualitative research may include interviews, archival records, documentation, direct or participant observation, and physical artefacts which are discussed in terms of this specific dissertation in the following chapters.

2.3.2 Interviews

In general, the qualitative interviews are divided into three categories: structured interviews, unstructured interviews, and semi-structured interviews (Rogers and Bouey, 1996, p. 52). First, structured interviews are often used in quantitative research. In structured interviews, researchers ask different interviewees the same set of questions, in the same order, and using the same words. Second, unstructured interviews do not have any predetermined set of questions; instead, the researchers and interviewees talk freely (Burgess, 1991). Unstructured interviews are often used in combination with participatory observation (mentioned below). Third, the format of semi-structured interviews, sometimes called guided interviews, is somewhere between structured and unstructured interviews in that the researchers prepare interview guides comprising a set of questions. According to Flick (1998, p. 76), this type of interview is widely used as the qualitative interview method.

The most used type of interview throughout this research process was the semi-structured interview. Before each data collection phase, the themes for the interviews were chosen by each research phase on the basis of the research question at hand. The semi-structured interviews conducted in the research, each of which was approximately one hour in length, were audiotaped and transcribed verbatim. The content of these transcripts was then analysed according to themes within each research phase. The semi-structured interviews allow researchers to generate their own questions that are connected to the structured themes.

According to most authors discussing qualitative research, the most utilised method of data collection in qualitative research studies is the interview. According to Yin (1994), interviews are one of the most important sources of case study information. In this dissertation, the total number of analysed interviews is 153 (Table 1; Appendix 5).

In the first research phase, the interactive process of data collection and analysis started at the Helsinki University of Technology Construction Economics and Management Laboratory (HUT/CEM) in the year 2000. Prior interview data had been collected in three projects called "Real Estate Maintenance Procurement and Contract Management" during the period 1998-2001, "Procurement of FM- and PM-services" during 2000-2002, and "Organisation and Procurement of Facility Services" during 2001-2003, producing a corpus that comprises 85 semi-structured and unstructured interviews and 10 focus group work shops discussing issues relating to contract management and the relational development areas of various service clients and suppliers in Finland and Northern Europe (see Appendix 5). The author was actively involved in the latest project by participating in the interviews and the focus groups, as well as producing his Master's Thesis and a number of research reports on the results (*e.g.*, Tuomela and Puhto, 2001).

The interviews started to focus on the actual studied phenomenon in 2001 during the research project "Organisation and Procurement of Facility Services" (Tuomela, 2002; Hanhijärvi, Tuomela and Puhto, 2003). On the basis of the research questions, a survey with unstructured (theme-centred) interviews was conducted. 25 interviewees were divided into three groups: users of facility services, service providers and people who were service clients / contract managers. The aim of the study was to establish problems

Table 1 Conducted interviews

Research phase	**Topic of the inquiry and references to original sources**	**Number of interviews**
1. THEORETICAL FRAMEWORK	Service Provision Trends of Facilities Management in Northern Europe (Tuomela and Puhto, 2001)	42
- generation	Procurement of FM- and PM-services (Heinimäki and Puhto, 2001)	43
	Organisation and Procurement of Facility Services (Tuomela, 2002; Hanhijärvi, Tuomela and Puhto, 2003)	25
2. PILOT STUDY	Network Service Organisation – a Multiple Pilot Study	25
- testing	(Tuomela and Salonen, 2003)	
3. CASE STUDY	Network analysis 1 (Tuomela, A., Heimburger, M., Nummi, J. and Toivonen, J, 2004).	9
- refinement	Network Analysis 2 (Tuomela and Toivonen, 2004)	8

and needs for development around the given research questions. The exploratory survey was conducted with semi-structured interviews and with focused themes by interviewing 25 workplace management professionals in different companies in the Finnish industry. The survey reworked the same themes using the people responsible for managing and purchasing the operational services as a target group. The groups were identified as three workplace knowledge holder groups (Appendix 5):

- contract managers (facilities and property managers)
- service providers
- customers (corporate real estate and human resources managers).

The second research phase, the exploratory pilot study, was conducted by interviewing 25 people responsible for buying and managing support services, representing a range of workplace and service functions. Interviews were analysed by comparing the interviewees' comments on similar issues to avoid bias and to gain a holistic view of the connections within the organisations. Moreover, the analysis was afterwards confirmed by the interviewees.

In the third research phase, the final case study, the interview data was collected in two separate network analyses among three types of network actors during the period 08/2003-04/2004 (see Appendix 5). In the first network analysis, the data was collected by conducting nine interviews among the key participants involved in the alliance formation and the current operational service processes. The interviews were conducted during the period 08/2003 - 04/2004 by researchers of the Innovation Management Institute, BIT Research Centre of Helsinki University of Technology. In the second network analysis, the empirical data was collected by a researcher from the Small Business Institute, Turku School of Economics and Business Administration during the period 08/2003 – 12/2003 by using eight semi-structured interviews with service providers and contract managers.

2.3.3 Focus Groups

Morgan (1997) identifies three types of uses for focus groups. Firstly, they are used as a self-contained method in studies in which they serve as the principal source of data. Secondly, they are used as a supplementary source of data in studies that rely on some other primary method such an interview. Thirdly, they are used in multi-method studies that combine two or more means of gathering data in which no one primary method determines the use of the others. Focus groups may be used either as a method in its own right or to complement other methods, especially triangulation and validity checking. Focus groups may be used at any point in a research project. Stewart and

Shamdasani (1990, p.15) have summarised the more common uses of focus groups to include:

- obtaining general background information about a topic of interest;
- generating research hypotheses that can be submitted to further research and testing using more quantitative approaches;
- stimulating new ideas and creative concepts;
- diagnosing the potential for problems of a new program, service or product;
- generating impressions of products, programs, services, institutions, or other objects of interest;
- learning how respondents talk about the phenomenon of interest which may facilitate quantitative research tools;
- interpreting previously obtained qualitative results.

In addition to the conducted interviews, a number of focus group workshops were organised that provided data for analytic purposes in each research phase. Nevertheless, the main purpose of the focus groups was to increase the validity and reliability of the analysed interviews. In other words, the focus group workshops were also organised for peer debriefing and member check purposes (see Lincoln and Cuba, 1984). The workshops gathered together multiple observers and interviewees to share their insights into the studied phenomenon and environment.

Six focus group workshops in all were organised in different phases of the research process (Table 2). The focus group approach produced rich data and allowed for a dialectical and multidirectional relationship between the group and individual interviews during the research process. The ideas and themes that emerged from the interviews were carried into the groups, which then generated subsequent themes.

Table 2 Conducted focus group workshops

Research phase	Focus group date and theme	Focus Group purpose	Size of the group
1. THEORETICAL FRAMEWORK - generation	1. Development needs of quality management and organising facilities services in Finland (6.3.2001).	Describe the development needs of different network actors (research phase launch)	3+3+2+4=12 (+ 4)
2. PILOT STUDY - testing	2. Analysis of the framework and planning of the pilot study. (8.3.2002)	Analysis of the framework and selection of the pilot cases	4+4=8 (+ 4)
	3. Connections of the four pilot study cases (14.1.2003)	Analysis of the results of the pilot study	2+2+3+1=8 + (3)
3. CASE STUDY - refinement	4. Network analysis 1 – result workshop (1.3.2004)	Analysis of the network analysis results of the case study	4 + (1)
	5. Network analysis 2 – result workshop (28.10.2004)		8 + (2)
	6. Improvement of network cooperation in the triadic case network (10.6.2004)	Description of the practical network development needs	4 + (1)

2.3.4 Participant Observation

It is pertinent to social research, through grounded theory, that it seeks to approximate to the context of that being studied, that is, for example, a business, its actors, their interactions and interrelationships; thus conveying a conceptual understanding of issues that make up their naturalistic world (Van Maanen, 1979; Douglas, 2003). Mintzberg (1979, p. 586) also emphasises the need for qualitative inquiry within organisational (naturalistic) settings.

A thorough case study analysis of a particular process will require the use of the researcher's personal observations that result from presence, participation, or even intervention in the actual process to be examined (Gummesson, 1993, p. 73). According to Patton (1990, pp. 205-216), there are variations in observational methods. First, the extent of the researcher's participation may vary from full participation to onlooker observation. Second, there is a continuum between overt and covert observations. In overt observations, people know they are being observed whereas in covert observations, they do not.

In this data collection, no onlooker and overt observations were conducted. However, observations on the personalities and expertise of the interviewees were analysed during each interview. The background and the behavioural aspects of each interviewee were analysed and related to each studied network. For example sales speeches and

subjective views of interviewees' personal performance within the network were observed with certain qualifications.

Author's participation and covert observations were used as invaluable aids facilitating the further understanding of the holistic nature of the phenomenon and the final case environment. The author's personal internal observations as a development manager at Senate Properties, where he is responsible for service and partnership network development, helped remarkably in understanding the holistic nature of the workplace networks in addition to the conducted interviews.

2.3.5 Documentary Analysis

Documents can be a corroborative data source for interviews and observations (Stake, 1995, p. 68). Documents could include letters, memoranda, agendas, study reports, or any items that could add to the database. The validity of the documents should be carefully reviewed so as to avoid incorrect data being included in the database. One of the most important uses of documents is to corroborate evidence gathered from other sources. The potential for over-reliance on documents as evidence in case studies has been criticised. There could be a danger of this occurring if the investigator is inexperienced and mistakes some types of documents for unmitigated truth. (Yin, 1994).

In this dissertation, the role of the documents as a data source is limited. However, formal written contracts of cooperation were used to some extent for planning and analytic purposes. Formal contracts were used during the network analysis processes where the formal interaction mechanisms were compared with the informal interaction. In the final case study, the contracts were examined with regard to whether they included written agreements on formal interaction and cooperation. In all cases, the formal means of interaction, such as regular meetings, were referred to superficially but neither the qualities nor the frequency of cooperation with other service providers was described. The formal interaction involved mainly reporting to the clients.

In general, the document analysis was mainly used for understanding the holistic nature of the phenomenon and the case environments. The contents of the documents are not presented in this dissertation because they functioned as a secondary data source in the research process, and in many cases, the document data was considered classified by the interviewed network members.

2.4 Data Analysis

2.4.1 General Analytic Strategy

Yin (2003, p. 109) suggests that every investigation should have a general analytic strategy, so as to guide the decision regarding what will be analysed and for what reason. In general, the collected data of the dissertation is inductively analysed via the naturalistic inquiry method (Lincoln and Guba, 1985) and the constant comparison technique (Glaser and Strauss, 1967). The research process of this dissertation is relatively long and contains data from several cases producing a database of multi-method evidence.

Case study is generally known as a triangulated research strategy. Triangulation has been broadly defined as “the combination of methodologies in the study of the same phenomenon” (Denzin, 1978, p. 291). Jick (1979) argues that triangulation can result in greater confidence in results, more creativity in research design, better understanding of divergent results or outliers, and a more comprehensive integration of theories.

Researchers are expected to make every effort to produce an analysis of the highest quality. In order to accomplish this, Yin (1994) presents four principles that should attract the researcher's attention: Show that the analysis relied on all the relevant evidence; Include all major rival interpretations in the analysis; Address the most significant aspect of the case study; Use the researcher's prior, expert knowledge to further the analysis.

In this dissertation, the general analytic strategy is based on multiple triangulation methods. According to Yin (2003, pp. 99-101) and Miles and Huberman (1994, pp. 40-48), the multiple strategy approaches are related to so-called triangulation, which means that the same phenomenon is approached from several different angles simultaneously, *i.e.* in a multiple methodological manner. Moreover, the multiple methodology refers often to the simultaneous handling of the different theoretical explanation models, or several parallel research data. The purpose of the triangulation is to increase the reliability and validity of the research. It is used in proving that a specific result is not merely random, since it has been produced by using several different approaches. Authors discussing qualitative research identify four types of triangulation (Denzin, 1984; Feagin, Orum, and Sjoberg, 1991; Stake 1995; Tellis, 1997):

- Data source triangulation, when the researcher expects the data to remain the same in different contexts;
- Investigator triangulation, when several investigators examine the same phenomenon;

- Theory triangulation, when investigators with different points of view interpret the same results; and
- Methodological triangulation, when one approach is utilised after the other in order to increase confidence in the interpretation.

2.4.2 Data Triangulation

In this dissertation, the data sources are limited to literature and empirical data collected through interviews, focus groups, observations, and documentary analysis. Since the studied phenomenon is new and the data collections exploratory, the interviews form the main source of data. However, the observations in the final case study help in understanding the complexity and human behaviour of the studied issue. Focus group workshops and documents, on the other hand, contribute to understanding the historical background of the interviewees and their organisations.

2.4.3 Investigator Triangulation

The investigator triangulation in this dissertation is used to record not only the views of the people directly involved in or affected by the case environment, but also those of the "outsiders" having a more objective view of the environment. Eisenhardt (1989) discusses the use of multiple investigators arguing that it has two major advantages. First, they enhance the creative potential of the study by having complementary insights and ideas, as well as different perspectives. Second, the convergence of observations from multiple investigators increases confidence in the findings. There are different ways of using multiple investigators (Eisenhardt, 1989, p. 538):

- Both (all) investigators visit the case study sites, thus allowing cases to be viewed from different perspectives. One of the investigators may also assign tasks on site; *e.g.*, one is the active interviewer and the other takes notes and observes.
- Multiple research teams – covering different cases or sites. This allows the members who have not been to a site to keep the perspective of an outsider, perhaps being less influenced, *e.g.*, by the personalities of the informants.
- Some members stay out of the field, then play role of devil’s advocate.

Researcher triangulation is mainly used in this dissertation to define the significant elements that join together and form greater entities during the three research phases. Investigator triangulation is also used for the elimination of unnecessary elements. In this study, this means that the researchers check the list of relevant facts and remove obviously exaggerated and unnecessary elements from the collected data.

During all the research phases of this dissertation, multiple forms of investigator triangulation are engaged. The data collection of the dissertation is completed in cooperation with investigators with different theoretical backgrounds and research projects. The co-investigators in research phases one and two had a background of construction economics and management or surveying. In the first network analysis of the final case study, the co-investigators had a background of industrial management, and in the second network analysis, a background of business administration. The roles of the investigator triangulation and the author's personal engagement varied during the three research phases (Table 3).

Table 3 Investigator triangulation during the research phases

Research phase	Multiple investigator perspective	Author's personal perspective
1. THEORETICAL FRAMEWORK - generation	Three research teams – covering different cases or sites. Five investigators visit the sites of the interviewed organisation, thus allowing the studied phenomenon to be viewed from different perspectives.	Parallel membership in two teams. Active member in 42 interviews (Tuomela, 2002; Tuomela and Puhto, 2003). Head researcher and supervisor of the interviews in the Organisation and Procurement of Facility Services (Hanhijärvi, Tuomela and Puhto, 2003).
2. PILOT STUDY - testing	One research team and two investigators covering four pilot case studies, thus allowing the studied phenomenon to be viewed from different perspectives.	Head researcher of the research project and supervisor of the interviews. Active member in 10 of 25 interviews. Personal emphasis in the analysis of the interviews and case study environments.
3. CASE STUDY - refinement	Two research teams and three external investigators covering the case study environment, thus allowing the studied phenomenon to be viewed from different perspectives.	Supervisor and external observer of the interviews. Observer of the network. Role of a devils advocate due to the professional and personal connections to the studied network. Personal emphasis in the analysis of the interviews and case study environments.

The interview data yielded by all phases was analysed by the author in all three phases, in cooperation with other interviewers. In the first and the second phase, the author of this dissertation was actively involved in the data collection. In addition to participating in interviews, the author planned and analysed the data of each research phase based on the research questions.

In the final case study, the author of the dissertation was personally embedded to the studied network as a representative of the focal firm, Senate Properties. Therefore, external investigators interviewed the other network members in order to get unbiased

data. However, the author planned and analysed the data of each research phase with the researchers that collected the data.

2.4.4 Theory Triangulation

In this dissertation, the existing theories applied were mostly from the workplace (FM and CRE) literature and the network management literature. From an epistemological stance, these disciplines have mainly been studied separately. One of the main novelty values of this dissertation is the integration of those two scientific fields. Workplace, CRE and FM management has been regarded a field of science from the early nineties, whereas the study of network management began in the sixties and seventies.

In this dissertation, the investigation of existing theories in both fields of management are used to compare the emergent theory with existing theories, as well as ask what is similar, and what does it contradict and why. As Gummesson (1991, pp. 14-18) describes, the researchers usually use a combination of the different approaches. Instead of trying to explain casual relationships by means of objective 'facts' and statistical analysis, hermeneutics uses a more personal interpretation in order to understand the reality. During the phases of the research process, literature was used for incorporating the results of the inductive empirical material into existing concepts and frameworks in order to make the results more universal and understandable.

According to Eisenhardt (1989, pp 544-545), by examining conflicting literature and seeking explanations for the possible contradictions one can pre-empt criticisms and increase confidence in the findings, but looking at conflicting theories also presents an opportunity for deeper insights. By studying literature with similar findings, one ties in the current study with previous work, corroborates the findings and strengthens confidence. According to Cronk and Fitzgerald (2002), in grounded theory building, literature may be used, for instance, to:

- provide the basis for argument;
- provide an overview of the state of the art, including best practice;
- identify the gaps in the body of knowledge;
- resolve apparent contradictions;
- stimulate theoretical sensitivity via knowledge of philosophical writings and existing theory;
- enable direct theoretical sampling (*e.g.*, provide ideas of where you might go to uncover phenomenon);
- provide supplementary validation;
- unearth research questions; and

- set interpretations on the literature by using it as a secondary source of data (*i.e.* when the literature is grouped and given conceptual labels).

This kind of dual approach for theory triangulation is in some methodology literature also called the multiparadigm perspective on theory building (Gioia and Pitre, 1990; Mingers, 2001) or meta-triangulation (Lewis and Grimes, 1999; Cronk and Fitzgerald, 2002; Jasperson et al. 2002). Meta-triangulation is a process of building theory from multiple paradigms which is roughly analogous in its processes to the traditional (*i.e.* single paradigm) triangulation (Saunders et al., 1999). Gioia and Pitre (1990) defined meta-triangulation as a research strategy approach of applying paradigmatic diversity to foster greater insight and creativity. According to Jasperson et al. (2002), meta-triangulation is a theory-building process that assists researchers in recognising, cultivating, and accommodating diverse paradigmatic insights (Gioia and Pitre, 1990; Lewis and Grimes, 1999). A researcher can use meta-triangulation to articulate the paradigms underlying the extant theory and to derive richer theoretical bases for understanding the studied phenomenon.

Theory triangulation, or meta-triangulation, between workplace (CRE and FM) and network management literature is therefore used in this dissertation for clustering the relevant analogies, elements and phenomena in order to interpret and create valid and reliable explanation models for the studied phenomenon (Table 4). The prior frameworks in the workplace literature (*i.e.* Barrett, 2000; 2003; Then, 1999, 2003, Krumm et al., 2001) focus primarily on economic issues but discuss the social network paradigm only superficially. More thorough theoretical models of the social network paradigm are presented in the literature of inter-organisational networks. This is roughly similar to Granovetter's early notion (1985) that the theory triangulation of the study involves two main approaches: the economic/business approach and the sociological approach. The business perspective perceives networks and social relationships and behaviour as a disturbing force in terms of economic behaviour, for example, a force that inhibits markets to function perfectly. The sociological approach, on the other hand, views networks and social relations as a "layer above" the lower layer of economics and business.

The workplace management literature references form a synthesis of the theoretical framework in this study and concentrate on economic and business related behaviour, such as strategic and operational interaction (Lambert, 1995, 1995; Barrett, 2000, 2003; Then, 1999, 2003; Alexander, 2004) between the workplace network actors. In this dissertation, the term workplace is used for combining the disciplines of corporate real estate management (CREM) and facilities management (FM). Nowadays, the workplace topics (see Joroff and Bell, 2001) are considered to be more integrated and connected to

other business support functions such as human resources (HR), and information technology (IT). Therefore, workplace network is defined in this dissertation as a cooperational network of several core business support functions such as corporate real estate management, facilities management, property management and different out-tasked services.

The network literature references in this study are more exploratory and serve as a point for comparison of the network theories relevant to each research phase (Table 4). The first phase of the research process, generation of the theoretical framework, is primarily based on the workplace literature.

Table 4 Theory triangulation approach in this dissertation

	Primarily used workplace (FM and CRE) theories	**Primarily used network management theories**
1. THEORETICAL FRAMEWORK *- generation (2000-2002)*	Theoretical framework building with a literature synthesis of the network service organisation based on existing theories in the FM and CRE literature. Conceptualisation of workplace knowledge holder roles, network service organisation and the governance model of workplace knowledge (Paper 2).	Identification of network governance with the presented role of a strategic centre (Lorenzoni and Baden-Fuller, 1995). Comparison that workplace networks are similar to social networks (Krackhardt and Hanson 1993; Cross and Prusak, 2002) and network organisations (Baker 1992) (see Paper 2)
2. PILOT STUDY *- testing (2002-2003)*	The responsibility for purchasing support services is often scattered to various actors, which causes functional 'silos' in the service management (Bogle, 1999). Specific identification that the organisational systems of FM have strategic connections with the strategic parts of facilities or workplace organisations and operational connections with different functional units (Barrett, 1995, 2000).	The network organisation may be viewed as a cluster of firms or specialised units coordinated by market mechanisms instead of a strict chain of command (Miles and Snow, 1992; Robbins, 1994; Tseng et al., 2002). Network organisations are composed of nodes and links with *formal and informal* (Baker, 1992; Nadler, 1992; Krackhardt and Hanson, 1993) as well as vertical and horizontal (Grönroos, 1996) connections.
3. CASE STUDY *- refinement (2003-2004)*	Building owner organisation's strategic role as covering the following: formulating and communicating a facilities policy; planning and designing for continuous improvement of service quality; identifying business needs and user requirements; negotiating service-level agreements; establishing effective purchasing and contract strategies; creating service partnerships and the systematic service appraisal of quality, value and risk. (Alexander, 2004)	Network organisation is an interdependent coalition of task- or skill-specialised economic entities, independent firms, or autonomous organisational units, that operates without hierarchical control but is embedded, by means of dense lateral connections, mutuality, and reciprocity, in a shared value system that defines "membership" roles and responsibilities (Achrol and Kotler, 1999). Building owner's role to act as a focal firm (Gadde and Håkansson, 2001, p. 75; Möller and Halinen, 1999; Tikkanen, 1998), or a strategic centre (Lorenzoni and Baden-Fuller, 1995) in the triadic alliance network (Hutt et al., 2000) based on the interdependence of companies (Turnbull et al., 1996).

However, the theoretical emphasis in the later stages, *i.e.* the pilot study (testing) and the final case study (refinement), shifts more towards the network management literature. In the pilot study phase, the framework derived on the basis of workplace management literature is compared with literature concerning the social network. In the final case study, the general theory triangulation is focused on strategic interaction and network management literature. The dialogue between the workplace and network management literature is probably most apparent in Paper 3 where general independent variables of network organisation governance and building owner organisation network management trends are compared with one another.

2.4.5 Methodological Triangulation

Methodological triangulation means that one approach is followed by another in order to increase confidence in the interpretation. According to Merriam (1988), the researchers generally interpret their data in one of two ways: holistically or through coding. Holistic analysis does not attempt to break the evidence into parts but rather to draw conclusions based on the text as a whole. However, the composition researchers commonly interpret their data by coding; in other words, by systematically searching data to identify and/or categorise specific observable actions or characteristics. Merriam (1988) suggests seven analytic frameworks for the organisation and presentation of data:

- The role of participants.
- The network analysis of formal and informal exchanges among groups.
- Historical.
- Thematic.
- Resources.
- Ritual and symbolism.
- Critical incidents that challenge or reinforce fundamental beliefs, practices, and values.

The research process in this dissertation involves three phases. Since the data in this dissertation is collected from several resources at different points in time various research methods were used. Due to the holistic and originally unstructured data, the primary analysis method in this study is coding. Qualitative network analysis approach is used as a secondary method which is explained after the coding.

2.4.6 Coding

Brown et al. (2002) suggest that the nature of coding in grounded theory necessitates going back to the data for different pieces of information at different times. This action means exploring new topics to saturation and addressing variations as they arise. Consequently, the lines between the three levels of coding are blurred and the usage of coding varies significantly between different studies. In general, coding definitions refer to any product of analysis that creates categories of the raw data, as well as explores the relationships between them (Alston and Bowles, 1998, p. 196). The proponents of the constant comparative methods suggest that similar data are grouped and conceptually labelled. Then the concepts are categorised and dimensioned. The categories and dimensions are linked and organised by relationship; conditions and dimensions are then developed and, finally, a theory emerges (Glaser, 1978; Glaser and Strauss, 1967; Strauss and Corbin, 1990; Wilson-Scott, 2004).

Miles and Huberman (1994, p. 10) argue that the qualitative evaluation cannot resolve the problems of causal conclusions any more than quantitative evaluation, but it can assess causality "as it actually plays out in a particular setting". One of the main differences between the original grounded theorists lies in their positions on the analysis of the collected data, which is called “coding” in the context of grounded theory. According to Douglas (2003; 2004), Strauss and Corbin are significantly more prescriptive in specifying the steps to be taken by a researcher in open, axial and selective coding, and following their process model (identifying codes as causal conditions, phenomena, context, intervening conditions, action/inaction strategies, consequences) in developing a theoretical framework. On the other hand, the adherents of Glaser allow for the central concept to emerge inferentially from the coding process – reflecting issues or problems as perceived as key by the actors being studied. The adherents of Glaser emphasise the creativity of a researcher in the analysis (see Glaser, 1992, p. 97) while the adherents of Strauss and Corbin emphasise systematic analysis, such as use of conditional matrices (see Strauss and Corbin, 1990, pp. 158-175). Nevertheless, both also emphasise the general adaptability of the methodology to different research projects.

In this research process, the coding and formation of dimensions was completed with a separate analysis of the gathered qualitative interview data in the different phases (see Paper 6). While the research questions evolved from the beginning, towards the end, the data gathered in each phase were grouped and conceptually labelled. The knowledge of the studied phenomenon was relatively limited in the first phase in comparison to the final case study. While the initial results were reached at the end of each phase, the

saturation of the results was analysed by re-coding the data in the autumn 2004 (see Paper 6).

The coding process in this dissertation varies somewhat from the approach presented by Strauss and Corbin's (1990, pp. 96-115), in which the same data is processed through open, axial and selective coding (Table 5). Glaser and Strauss (1967) and Strauss and Corbin (1990) call for open coding as the initial phase of grounded theory analysis. In this study, open coding produces dimensional properties of the theory and the theoretical framework of the network service organisation (Appendix 1). According to Wilson-Scott (2004), it is during reflective coding, traditionally called axial coding, and selective coding that a traditionally constant comparison is made. In this research, the axial coding in the pilot study phase is based on the categories created in the theoretical framework phase (Table 7, p 44). The selective coding in the final case study is based on the categorized dimensions produced in the pilot study phase (Appendix 4).

Table 5 A Comparison between the Strauss and Corbin Approach and the Adapted Approach adopted in this research (modified from Sarker et al. 2001, p.53)

Aspect of Methodology	**Strauss and Corbin's approach (1990)**	**Adapted approach in this dissertation**
1. Data Sources	Interview transcripts, field observations, documents etc.	Primarily interview transcripts, also focus groups, field observations and documents (formal contracts).
2. Open Coding	Involves immersion in the data and generation of concepts with dimensional properties using constant comparison; primarily an interpretive step.	Interpretive and causal comparison of data gathered in five projects. Interaction and cooperation development areas produce four dimensional proposal categories to contribute to the networking between workplace network members.
3. Axial Coding	Identifying categories and mechanistically linking them with respective subcategories using the "paradigm model".	Comparative analysis of different groups or subgroups through a developed paradigm model (theoretical framework). Pilot study with four cases produces final proposals for the final case study.
4. Selective Coding	Selecting a core category and creating a storyline of the core category that links other categories to the core. Selection of the core category and linking it to other categories involves the application of the "paradigm model" at the level of categories.	Selection of the core category of joint workplace network strategy building. Case description of the network interaction and cooperation improvement is done in a case network (at Senate Properties). Refinement of the final theory and hypothesis.

In the first phase, open coding is conducted from the generated categories, themes are identified , and patterns searched for. Data are divided into concepts with properties and dimensions suggested by the workplace network context. In the second phase, axial coding is used for comparing the identified roles and categories, thus helping the investigator to understand the construction of their interrelationships in four workplace network environments. In the third phase, a case study is conducted for selective coding with the aim of integrating and refining the theory. How and why questions are raised and case descriptions made for describing the chosen core category and the central phenomenon that is identified during the earlier phases of coding. The coding continues until theoretical saturation is reached and when new information produces little or no change to the code network (see Pandit, 1996).

Grounded theory and coding methods in this dissertation encompass different research techniques, form qualitative data that improve the rigor of the theory and further explain the achieved results. Besides the above-mentioned coding, and the usual qualitative data collection and analysis methods with validating purposes, the possibilities for improving workplace network interaction and cooperation were analysed using the network analysis method.

2.4.7 Qualitative approach to network analysis

Network relationships can be justified by referring to diverse theoretical backgrounds. A large number of conceptual studies have contributed to the explanatory advancement of inter-firm organisation. The literature provides a long list of different approaches emphasising different aspects of networking (see e. g. Zettinig, 2003; Easton and Araujo, 1996, pp. 68-71), transaction cost reduction (Williamson, 1975), increases in power (Pfeffer and Salancik, 1978), cost and benefit consideration (Powell, 1990), obtaining legitimacy (Meyer and Rowan, 1977), and interaction and long-term adaptation (Håkansson, 1992; Möller and Wilson, 1995).

In this dissertation an interaction approach of network analysis (Håkansson, 1992; Möller and Wilson, 1995; Turnbull et al, 1996; Olkkonen et al., 2000; Axelsson, 2002; 2003; 2004, Leek et al., 2003; Valk et al., 2004) is used for the exploration workplace networks. The interaction approach focuses on the relationship rather than the transaction as the unit of analysis and it aims at understanding the patterns of dependencies between companies.

The network analysis method is used along coding as an qualitative empirical research method for analytic purposes. As recognized by (Gronholm, 2002; Goldkuhl and

Cronholm, 2003; Axelsson and Goldkuhl, 2004) a general weakness in grounded theory building is its lack of illustration techniques. Network analysis applications and techniques focus on the communication structure of an organization, which can be operated into various aspects (see Scott, 2000). Structural features that can be distinguished and analyzed through the use of network analysis techniques are for example the (formal and informal) communication patterns in an organization or the identification of groups within an organization (cliques or functional groups).

According to Granovetter (1973) the network analysis tools should provide a method for analysing the content (meaning and qualitative factors) of interpersonal relations - such as characterisation of the constant interaction between macro level social structures and micro level individuals meets some of these requirements. Network analysis is in general terms used for explaining the connection and interaction between network members (Karathanos, 1994). Network analysis method in this dissertation is simplified because of study's exploratory nature. Measurement of traditional sociometric characteristics such as density, centrality, cores, positions, cliques, clusters and roles (Scott, 2000) is not considered as a priority when the qualitative data is going to be gathered in a case study and the research problem is "How can workplace networks improve their interaction and cooperation?"

In this dissertation a network analysis is used to elaborate the knowledge of the interaction and cooperation of workplace networks. According to Knoke and Kuklinski (1982, pp. 14-16) in network analysis, a theoretical research framework generally constitutes the basis for the study of the content of a relation. This theoretical framework is a product of an earlier 'dialogue' between theory and empiricism. In this dissertation the network analysis theory is used to determine the content of relations, i.e. to justify studying certain types of relation networks and to find out qualities of how the studied actors interact and cooperate in different workplace networks.

In the first phase the network analysis is only identified and stated that it can possibly be used in later stages of the research (Paper 1). The network analysis is being used in its earliest form in the second pilot study phase. The pilot study conducts a business unit level[1] analysis where the pilot study environments have multiple connections and business units where to interact. In the pilot study the "network organisations" are composed of nodes and links with formal and informal (Baker, 1992; Nadler, 1992; Krackhardt and Hanson, 1993) and vertical and horizontal (Grönroos 1996) connections. The network organisation can be viewed as a cluster of firms or specialised units coordinated by market mechanisms instead of a strict chain of command (Miles

[1] According to O´Mara (1999), the business unit level is the best point at which to examine the value chains of CRE and FM.

and Snow, 1992; Robbins, 1994; Tseng et al., 2002) (see Paper 2). In the pilot study phase a connectionist approach (see. Borgatti and Foster, 2003) of network analysis is chosen. The connectionist approach in this dissertation analyses how ties between workplace network actors create similarities on a improvement of workplace network management. Network analysis of the pilot study phase is explained more in pages 42-44.

The final case study analyses a triadic alliance network of a) customer organisation, b) building owner organisation and c) service provider organisations. The network analysis is conducted from an egocentric network perspective (see Johansson et al., 1995, pp. 23-36) at Senate Properties, a Finnish building owner. In the final case study Senate Properties' position as a long-term strategic centre is analysed through the mutual interaction development needs of the actors in the workplace network. These centrally-acting firms are commonly known as ´focal firms` (Gadde and Håkansson, 2001, pp. 57-117; Möller and Halinen, 1999; Tikkanen, 1998),´central firms` or ´hub firms` (Jarillo, 1988; Piercy and Cravens, 1994) or intermediary firms (Havila, 1996; 2003). One central theme of criticism about the focal firm perspective is that any view of a network centred on a single company, or defined by the company itself is inevitably restricted. Some inter-organisational network authors (i.e. Ritter et al., 2002) claim that the firm level is not appropriate for analysis as networks occur and evolve "of their own" and thus are unmanageable. However, the manageability of interaction of the workplace network from the focal firm perspective is explored in the final case study. The results of the network analyses are discussed later with the results of the research phases in the pilot study and final case study sections.

3 RESULTS

3.1 Theoretical Framework – Conceptualisation

3.1.1 Open Coding

In the first phase, generation, a novel theoretical framework for network service organisation is developed. The grounded theory started from inductive data analysis which was originally presented in the European Real Estate Society conference in June 2002 in Glasgow (Tuomela, 2002). In this dissertation, the data is re-analysed (see paper 6) and the data of the other phases is coded.

The first phase – the "theoretical framework" – generates inductively dimensional properties and proposals around the theoretical framework that provides a novel way of assessing the interaction of workplace networks behind the complex FM environment.

During the first phase, a “network service organisation” framework (see Paper 1) is also created by a deductive literature synthesis. The framework focuses on explaining to the different members what their roles are in the workplace network.

The open coding is based on the interview data collected in several research projects of the Helsinki University of Technology Construction Economics and Management Laboratory (HUT/CEM) in 1998-2003. The iterative process of data analysis started in 2000. Prior interview data had been collected in three projects called “Real Estate Maintenance Procurement and Contract Management” during the period 1998-2001, “Procurement of FM- and PM-services” during 2000-2002, and “Organisation and Procurement of Facility Services” during 2001-2003, producing a corpus that consists of 85 semi- and unstructured interviews. In addition to contract management, the data discussed the development areas in the relationship management of various FM service clients and suppliers in Finland and Northern Europe.

Although the aims of the research projects were different, the focused interviews showed reoccurring areas for development in FM organisation interaction. During the latest research project, the interview data started proposing that the interviewed workplace knowledge holders did not see themselves as a single entity, which generally exacerbated the problems in interaction in the various interviewed organisations. A general need for investigating interaction and cooperation on a larger scale was evident.
The results yielded by the conducted interviews are analysed by using open coding (Appendix 1). According to Strauss and Corbin (1990), open coding is the part of the analysis concerned with identifying, naming, categorising and describing the phenomena found in the text. Essentially, each line, sentence, and paragraph is read with the aim of answering the repeated question "What is this about and what is being referenced here?"

The properties (perceived problems and development areas) were categorised from the perspective of interaction and cooperation into general categories: internal client-supplier problems (vertical problems), customer relationship management problems, service-to-service problems (horizontal problems) and quality management problems (continuous improvement). On the basis of these categorised dimensional problems and properties, dimensional proposals to solve them were developed (Table 6 and Appendix 1). All of these proposals defined how workplace networks could improve their interaction and cooperation regarding each dimension.

Table 6 Dimensional properties and proposals on the basis of open coding

Dimension	Dimensional properties	Dimensional proposals
1. INTERNAL CLIENT-SUPPLIER RELATIONS	• Responsibility for purchasing support services and contract management is fragmented. • Workplace issues and service are not seen as a single entity with strategic significance.	▪ *Formal cooperation and joint strategic planning for purchasing should be established between the contract managers.*
2. CUSTOMER RELATIONSHIP MANAGEMENT	• Communication towards the user organisation is irregular and disorganised. • Customer relations management depends mostly on the personal contacts at the different levels of the workplace network.	▪ *Joint customer relationship management should be organised at all levels of the user organisation.*
3. SERVICE-TO-SERVICE RELATIONS	• Service providers do not have formal communication with each other. • Clients and Service providers are not networked with each other at the different levels or the workplace organisation.	• *Service development and delivery should be performed in cooperation. More interaction should be established.*
4. QUALITY MANAGEMENT	• Service quality issues are not managed in cooperation (at the different business relationship levels).	• *Performance gaps in the operative work should be identified and continuously fixed.*

The coding process of phase one proposes that workplace networks should create formal interaction based on continuous improvement. In other words, the open coding produced information indicating that people and organisations in a workplace network had knowledge that was beneficial for workplace network cooperation. Therefore, the different holders of workplace network knowledge should develop joint planning, management, service delivery and general information exchange in a more customer-focused manner.

3.1.2 Network Service Organisation Framework

A need emerged to conceptualise interaction and cooperation of different network actors within the workplace network. Paper one describes the conceptualisation of these interaction and cooperation roles based on deductive generation of the theoretical framework. Paper one acts as a deductive preparation for the pilot study which extends the previously developed frameworks and provides a fundamentally different way of grasping the interaction in workplace networks by the means of a literature review.

During the original open coding process in 2001-2002, the first visual illustration of the network service organisation was made on the basis of presented dimensions. The illustration was grounded on a 'tayloristic organisation triangle' that described and simplified the vertical, horizontal and customer relationship and quality management dimensions representing the needs for interaction and cooperation in the workplace network (Figure 4). Paper one (Tuomela, 2003) describes a comparing literature synthesis to these dimensions that presents the roles and links of the network organisation. The roles of workplace knowledge holders are divided into service providers, customers and contract managers. Workplace knowledge emerges from personal contact between people representing different roles in the organisation. In the network service organisation, the service staff forms a shared knowledge base of their scattered personal links to the supported customers. To facilitate understanding the complicated roles within the workplace environment, a network service organisation framework is presented. The presented network service organisation framework comprises three integrative organisational levels: strategic clients, network integrators and functional service units. Each level has a customer counterpart on the corporate side.

A network service organisation framework consists of centralised and decentralised management functions of either in-house or contracted-out services. The functional levels of the network can be divided into hierarchical levels of strategic clients, network integrators, and service units.

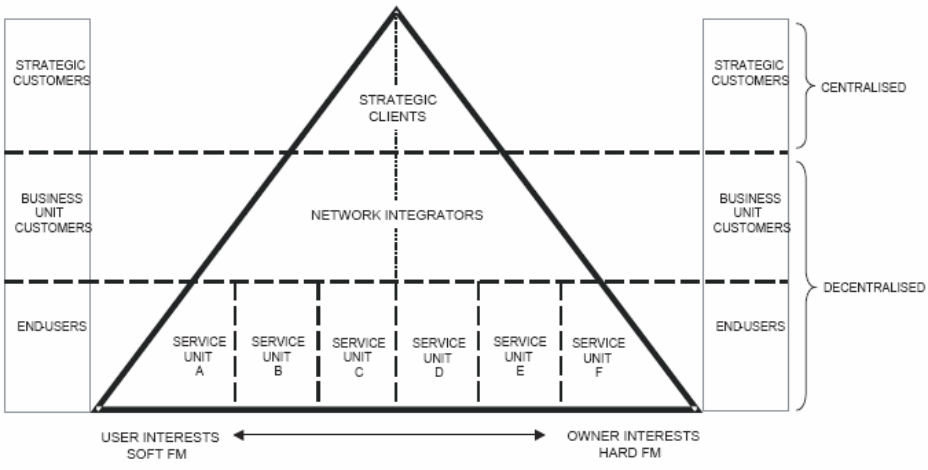

Figure 4 Network Service Organisation Framework

Strategic Clients are the CRE, HR, and IT executives responsible for making corporation-wide contractual arrangements and defining corporate service strategies, policies, and standards. The strategic clients interacting with service provider partners perform a partnering champion role (Roberts, 2001) at senior management level. In leased premises institutional owners, such as asset and property managers, can be seen as strategic clients because of their significant strategic interests in maintaining buildings and servicing their tenants. Strategic clients establish connections, such as between corporate executives and shareholders (van den Ende, 2001; Theriault, 2002), with the senior management of the core business.

Network Integrators are the middle management of the service network focusing on operational management at the level of the decentralised business unit. Network integrators consist of in-house and external FM, PM, and service providers and part-time contract managers who function as a hierarchy of authority between the centralised management and local service providers. The network integrators create a workplace interface (Carder, 1995) with local business unit managers (Theriault, 2002) or the department managers (van den Ende, 2001) defining the service needs for each business unit served.

Service Units are the operative level of the network service organisation and consist of several functional, in-house, or contracted-out service units. The services are generally divided into soft support services for the general office, such as catering, cleaning, and reception, and the technical hard services, such as building and mechanical maintenance, reprographics, and security (Alexander, 1996; Lambert, 1999). The operational levels formed by front-line service staff create an ongoing customer interface with the consumers (Braat, 1996) or end users of the services provided.

The soft and hard service division extends through the whole network organisation. As in CRE roles (Krumm, 1999), strategic client roles can be based on either ‘owner interests’ or ‘user interests’. These interests determine the strategic demands for the property and user-oriented business support services.

Along with the theoretical framework, a model for workplace knowledge governance was developed during the first phase. Continuous improvement and learning is based on joint strategy alignment, operational planning, service delivery and monitoring. In the model the formal teams of the “siloed” network organisation are formed in a similar way to the teams introduced by Lambert et al. (1995) for the CRE environment. These teams include task forces, executive teams, internal and external professional service teams and service delivery teams. The teams establish the foundation for the four-stage governance model for network organisation’s extensive communication (Figure 5).

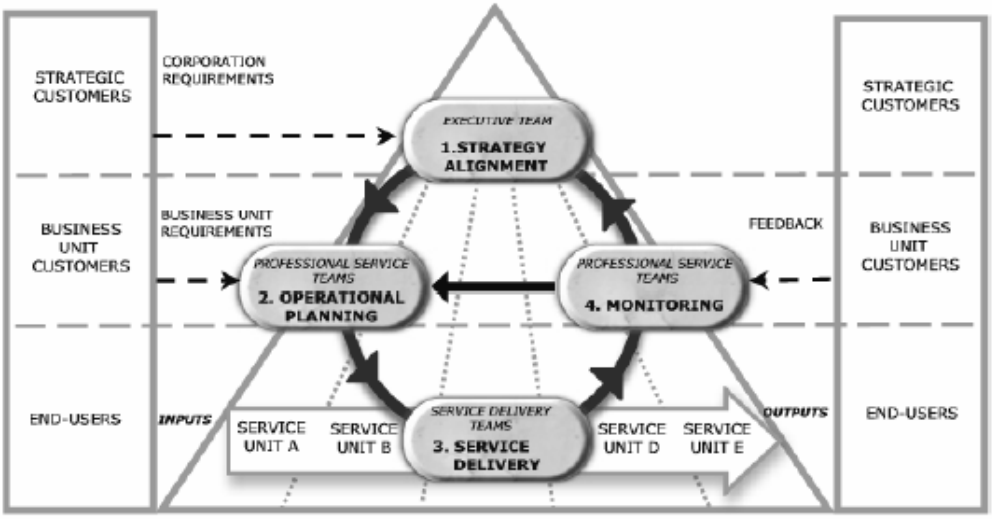

Figure 5 Governance model of workplace knowledge

1. Strategy alignment: performed by the executive team consisting of strategic service providers, contract managers and customer representatives to address major service and workplace decisions. The executive team defines a collective strategy on the basis of association strategies of the network organisations. Shared policy deployment defines organisation-wide goals for services and oversees workplace knowledge creation in the network organisation. A linkage is made to the network integrators by planning and programming the aligned strategy.

2. Operational planning: performed by professional service teams consisting of workplace knowledge holders within the decentralised business units. The professional service teams plan and oversee decentralised client and network engagements. The assembled network integrators ensure operational implementation of workplace services, transfigure the aligned strategy to plans and operative goals, and design operational service delivery systems. Professional service teams identify the requirements within the business units. Operational plans are implemented by setting business objectives for service units. Defined input-based and output-based service levels, performance indicators and goals ensure empowerment and leverage performance inside and between service units on the operational level.

3. Service delivery: is performed by the front-line service staff. Monitoring daily service needs and performance gaps in the operative work ensures continuous improvement in service processes. Operational workplace knowledge can offer considerable support for upper-level decision making.

4. Monitoring: performed by professional service teams, ensuring workplace knowledge integration between operational work and strategic management. By monitoring and analysing customer feedback, the network integrators are able to adapt operational data and information for executive level workplace knowledge. Service Monitoring function provides the tools to establish and monitor building performance trends against predefined service level agreements and predicts service performance given certain conditions.

The generic model and process ensures exchange of workplace knowledge between the decentralised centres of excellence and centralised workplace management. Building a formal and efficient feedback system for workplace knowledge can be time consuming. Before organisations start building teams to increase the exchange of workplace knowledge, the existing channels of both informal and formal interaction should be identified.

The model proposes that the workplace knowledge of the network should be formed in centres of excellences within the decentralised business units and managed through the governance model presented (Figure 5). The model presented consists of formal cross-functional teams and continuous improvement based on joint strategy alignment, operational planning, service delivery and monitoring stages.

3.1.3 Theoretical Framework Building

Phase one proposes that workplace networks should form formal cross-functional teams and joint formal interaction based on continuous improvement. The open coding process produced categorised dimensional properties of internal client-supplier problems (vertical problems), customer relationship management problems, service-to-service problems (horizontal problems) and quality management problems (continuous improvement) which may be at least partially solved by the formation of interaction and cooperation mechanisms based on formal teams and task-forces. In other words, the open coding produced information indicating that people and organisations in workplace networks should develop joint planning, management, service delivery and general information exchange in a more customer-focused manner. A need emerged to conceptualise the roles within the workplace network.

During the first phase, the network service organisation roles of strategic clients, network integrators and functional service units were conceptualised to facilitate the systematic consideration of the roles in the workplace networks. The deductive literature review (Paper 1; Tuomela, 2003) showed similar results on the basis of the synthesis model of workplace knowledge governance. First, the dissertation

conceptualises a new kind of framework of network service organisation describing the interaction relations between members of a workplace network. The theoretical framework helps workplace network actors, such as building users, building owners and service providers, to view their interaction and cooperation issues in novel ways. Then, as the theoretical framework is being built, three dimensions of the network organisation are conceptualised:

1. *Workplace knowledge holder roles* that hold specific knowledge of supported businesses. The roles of workplace knowledge holders are divided into service providers, customers and contract managers.

2. *Network service organisation framework* that has three integrative organisational levels: strategic clients, network integrators and functional service units.

3. *Governance model of workplace knowledge* that consists of formal cross-functional teams and continuous improvement based on joint strategy alignment, operational planning, service delivery and monitoring stages.

On the basis of the results yielded by the first phase, strategic clients, network integrators and functional service units should interact and form formal cooperation between teams and task forces on three presented network levels. It may be proposed that workplace organisations should have cooperation mechanisms where the contract management and performance standards affiliate to the governing values of the end-user organisation and the strategies of service providing partners.

It may be proposed that people and organisations on same levels of organisation should develop planning, management, service delivery and general information exchange in a customer-focused manner instead of company-driven competitive advantages. By the means of joint strategy, the operational service levels, goals and measures can be implemented in operative work.

3.2 Pilot Study – Testing

The second phase of the research process, *i.e.*, the pilot study, explores the interaction and cooperation of four different workplace networks (see Paper 2). In the second phase, the developed framework of network service organisation is to put on trial. The second phase is established to test the generated theoretical framework and the qualities of the dimensional proposals generated in the first research phase.

In addition to providing novel information about the general research problem, the pilot study aims to demonstrate proposals, data collection plans, and relevant lines of questioning for the final case study based on the discovered connections. A pilot study leans more toward the ‘exploratory study’ pole of case study design, and in its later stages, with the benefit of experience, it may have a more ‘explanatory’ or ‘confirmatory’ focus (Robson, 1993). The secondary aims of the pilot study are to explain some of the connections within workplace networks: (1) by describing the complex environment through network service organisation levels; (2) by analysing the strategic, operational, and functional connections through the analysis of formal and informal interaction between the functional parts in four pilot cases, and (3) by aligning future research needs for further analysis.

3.2.1 Selecting the Multiple Pilot Cases

Eisenhardt (1989, p. 537) emphasises the importance of case selection in the theory building process. Arguing that the concept of population is applicable also in this context, she states that the population is crucial for two reasons: firstly, because the population defines the set of entities from which the research sample is to be drawn, and secondly, because it controls extraneous variation and helps in defining the limits for the generalisation of the findings. Theory building case studies often use theoretical sampling where cases are chosen for theoretical, instead of statistical, reasons. The objective of theoretical sampling is to select cases that will replicate or extend cases and theoretical reasons that provide examples of polar types. According to O’Mara (1999), the level of business units is the best level at which to examine the value chains of CRE and FM. Therefore, an exploratory pilot study regarding connections between business units was chosen in order to examine the strategic, operational, and functional connections in network service organisations.

The pilot cases were chosen in cooperation with the members of the research project’s steering group that consisted of the sponsors of the research project. The selection criteria were multilateral. The primary selection criteria were the network member roles (Figure 6). It was wanted that the roles of CRE, HR units would be examined as service clients. Nevertheless, simultaneously the role of external service providers and building owners was found to be an interesting issue for exploratory comparison. The internal and external roles were selected as the main criteria for the pilot study. The secondary selections criteria were the centrality of the CRE decision-making in the customer organisation and size of the customer organisation.

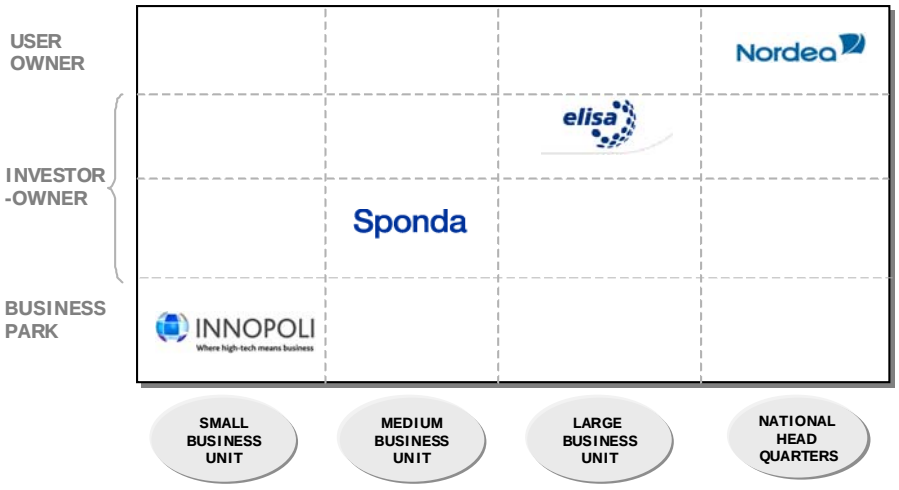

Figure 6 Four pilot study cases

3.2.2 Data Collection

The network service organisations were studied from specific perspectives by interviewing the staff with different client and service management roles. Prior to the data collection, each pilot study network was sketched, by the researchers and the focal people in the network, from formal and informal perspectives. Interviewees were selected using the snowball sampling method (Frank and Snijders, 1994; Scott, 2000) from among the strategic client representatives of the case organisations. The interviews were analysed by cross-checking the interviewees' comments on similar issues in order to avoid bias and to gain a holistic view of the connections within the organisations. Furthermore, the analysis was afterwards confirmed by the interviewees. The exploratory pilot study was conducted by interviewing 25 people responsible for buying and managing support services representing a range of workplace and service functions (see Appendix 2). The four environments were analysed by interviewing:

(1) HR and CRE clients, the FM service provider, and the site managers of service providers in the *corporate headquarters* of a financial service group (8 interviewees);
(2) HR and FM clients as well as key account managers and site managers of service providers in a subsidiary of a telecommunications service provider company functioning as a *large business unit* (6 interviewees);
(3) the property manager, business unit directors in part-time client roles, and service provider representatives in a *medium-sized business unit* managed by a real estate investment company (5 interviewees), and

(4) the managers, an FM service provider, and the site managers of service providers in a technology park, which represents a *small business unit* (6 interviewees).

The collected interview data was first analysed using a separate qualitative network analysis method within each of the four networks in the autumn 2002 (Paper 2), and then analysed again using axial coding in the autumn 2004. The analysis and results are presented in the following chapters.

3.2.3 Network Analysis Approach

The general aim of the pilot study with four cases was to comprehend the network paradigm in the workplace environments. In the network analysis, the qualitative information of each network was based on the interview themes of (1) internal client-supplier relations (vertical cooperation), (2) customer relationship management, (3) service-to-service relations (horizontal cooperation) and (4) quality management. This information yielded the general result that formal interaction should be established on all levels of the workplace network. The network analysis of the pilot study aims to explore how the formal and informal structure of relationships around a person, group, or organisation affects the beliefs or the behaviours within the network service organisation.

The network analysis approach utilised in the pilot study research originated from an assumption that networks are made up of two major compounds which can be described as nodes and links. Nodes represent organisational units and individual actors, and links represent the relations between them (Walstrøm, 2001). Within the framework of this study, the nodes represent managers on different levels, each representing an organisational unit or an external company. Links, on the other hand, represent the connections between these managers, units, or organisations. Grönroos (1996) suggests that partnerships and networks are formed of horizontal and vertical connections. In the context of network service organisations, vertical connections refer to buyer-seller coordination, and horizontal ones refer to connections between the functional activities on the same network level such as soft support services for the general office, such as catering, cleaning and reception, and the technical hard services, such as building and mechanical maintenance, reprographics and security (see e.g. Alexander, 1996, pp. 133-144). According to Barrett (1995; 2000), the organisational systems of FM have strategic connections with the strategic parts of facilities or workplace organisations and operational connections with different functional units. The strategic and operational connections refer to a shared vision between different network levels (Figure 7).

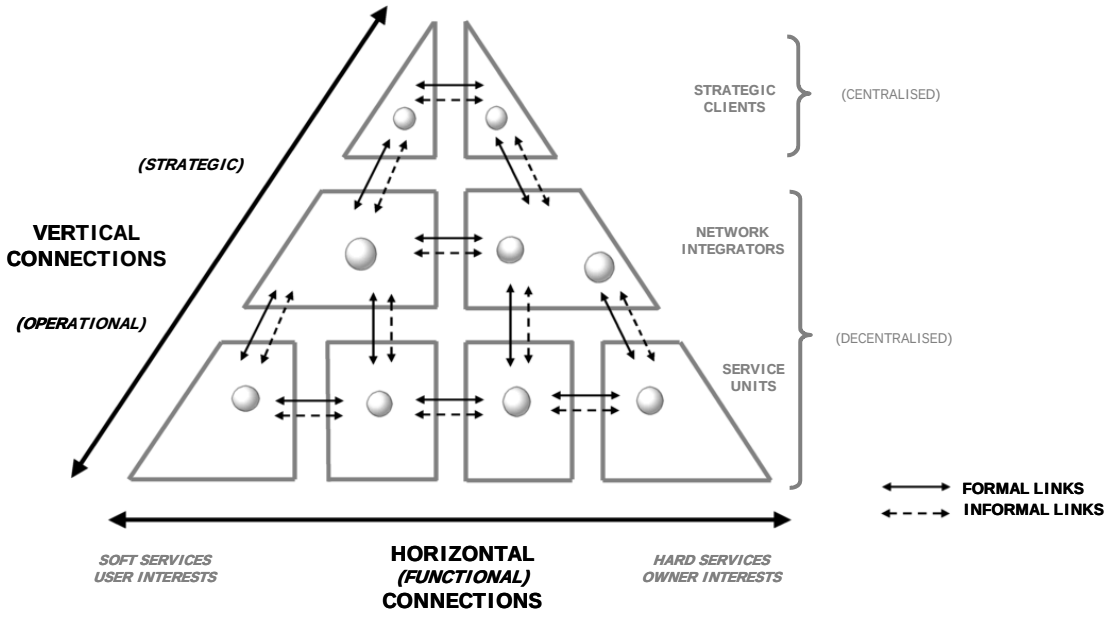

Figure 7 Connections of Network Service Organisation

The perspective to network analysis was in which individual managers and their units affiliate and connect to the network organisation. According to Krackhardt and Hanson (1993), networks, and according to Nadler (1992), network organisations are composed of formal and informal connections. Farris (1979) describes the origin of formal connections as explicit and planned and of informal ones as implicit and spontaneous. The forms of formal interaction have commonly been listed as cross functional teams, integrators, task forces, and liaison roles on the basis of the needs and costs of interaction (Nadler and Tushman, 1997; Daft, 2001; Galbright, 2002). Galbright (2002) adds informal communication to the list as the cheapest form of lateral interaction.

Each network service organisation served as an individual unit of analysis in the four case networks. However, the characteristics of workplace networks were analysed in aggregate. Each pilot case study unit, while distinct in its size and context, were subject to a similar analysis. In particular, given the explorative objective of this study, the interaction and co-operation of different functions were examined.

The gathered interview data was analysed by the two researchers together by drafting the formal and informal interaction and cooperation links between the interviewees. The qualitative information of each network's (1) internal client-supplier relations (vertical cooperation), (2) customer relationship management, (3) service-to-service relations (horizontal cooperation) and (4) quality management was analysed. The network organisations were analysed based on the formal and informal connections of each network organisation.

The network analysis resulted three types of observations. *Observation one*, there is general need for multi-level interaction and co-operation. The corporate headquarters and large business unit cases had an evident need for multi-level interaction. The active role of strategic clients affected the strategic connections and interaction throughout the analysed organisations. Strong formal connections between HR and CRE improved the strategic connections in workplace management. Additionally, the interaction between strategic clients and the top management of service provider companies strengthened the dyadic relations between client and service provider companies and encouraged a problem-solving atmosphere on the lower levels of the network organisation.

Observation two, the strategic connection is often weak resulting in a gap between strategic client and network integrators. Due to the physical separation of centralised strategic clients and decentralised network integrators, the formal interaction had become binding. Formal meetings between strategic clients and functional key account and site managers enabled strategic information to be converted and delivered to operational managers. In the decentralised business units the network integrators functioned as primary information brokers and central connectors (Cross and Prusak, 2002) between the service units and business unit customers. Facility managers in particular had an important role in integrating the communication and information flow between several service units. However, the more work the network integrators had as a result of managing bigger organisations, the less time they had for formal interaction.

Observation three, the traditional distinction between soft and hard services is still strong. Even though the service organisations were distinct, the soft user services had strong functional, formal, and informal connections. Despite the formal contractual boundaries, soft service functions such as catering, reception, and cleaning had a significant need for service process integration. Service ordering, complaints, and shared spaces connected the functional units in all the organisations. Maintenance service providers had strong vertical connections with client organisations in all the cases studied. On the other hand, cleaning service providers with management responsibilities were isolated from interaction with other units.

Connections between soft and hard services and management functions were less obvious. In the case of the property investor the connections were limited to the property manager's interaction with a small number of business unit customers and to the maintenance service provider. Property and other service management functions that were a part of the same organisation or physically located on the same site had more formal and informal interaction. However, the functional connections were mostly limited to budgeting and ad hoc meetings concerning removals and a customer's needs for technical solutions.

General observations were that, the proposed framework is useful starting point for companies to study and improve the co-operation and interaction between different functions. The pilot study indicated strategic, operational, and functional barriers between the interviewees, without formal and informal connections. In general, formal connections such as cross-functional teams, task forces, and liaison roles increased the number of strategic, operational, and functional connections between all the functions in the network service organisation. Formal connections affected network connectivity in three ways: (1) formal connections led to stronger and information-intense informal connections; (2) network functions that were connected by formal links had a better foundation for sharing the mutual goals of supporting core businesses, and (3) formal connections were readily compensated with informal connections in the cases of long-term interaction. The functions without formal connections were more disposed to the management's failure to look at workplace issues broadly than those with existing formal connections.

The network analysis implied that without formal connections the functions of the network service organisation faced barriers to both vertical and horizontal interaction.

The studies of the networked service organisations in the four pilot case environments provided unique insights into workplace network governance. The strategic cooperation and formal interaction should be agreed upon in the very beginning of an alliance relationship. In addition, the strategic clients should enable the facilities managers and other network integrators to act in boundary spanner roles. This creates stronger ties between strategic planning and operational service delivery (see Barrett, 2000).

3.2.4 Axial Coding of the Collected Data

The interview data was reanalysed in autumn 2004 through coding (Paper 6; Tuomela 2005). The coding perspective in the pilot study was axial coding where the data are combined in new ways by making connections between categories identified in the open coding. While the open coding of grounded theory was based on the interpretive and causal comparison of development areas among the workplace network members, the axial coding of the collected data was based on the identified roles in the network service organisations.

According to Strauss and Corbin (1998, p.124), the purpose of axial coding is to form "more complete and precise explanations about phenomena". In the axial coding, the network roles were selected as a primary coding category. By this, the presented axial coding relates to the illustrated framework of generated network service organisation. The data was analysed again, and the dimensions analysed on the basis of the

backgrounds of the interviewees. The iterative process produced a new set of dimensions and dimensional proposals based on the interviewees' roles (Table 7). The axial coding suggests that formal cooperation and continuous improvement rooted in joint strategy alignment, operational planning and service delivery should be established at all network service organisation levels.

Table 7 Dimensional proposals on the basis of axial coding

Dimensions	**Internal Client-Supplier Relations Vertical cooperation**	**Customer relationship management**	**Service-to-service relations Horizontal cooperation**	**Quality management**
1. STRATEGIC CLIENTS CRE, HR, IT, AM	Joint strategy for purchasing the services should be established for contract managers.	Joint customer relationship management should be established between the strategic clients	Formal cooperation should be established between the strategic clients	Guidelines for continuous improvement and quality management should be established
2. NETWORK INTEGRATORS FM, PM	Joint strategy implementation plan for purchasing the services should be established for contract managers.	Joint customer relationship management should be established between the network integrators	Formal cooperation should be established between the network integrators	Performance gaps in the operative work should be identified and continuously fixed
3. SERVICE UNITS	Joint strategy implementation plan should be established for service providers.	Joint customer relationship management should be established between the service units	Formal cooperation should be established between the service units	Service delivery should be performed jointly by the front-line service staff (when necessary).

3.2.5 Results of the Pilot Study

The results yielded by the pilot cases supported the logic of the network service organisation framework. The presented roles of strategic clients, network integrators and service units existed in all studied pilot cases. Even though the roles had interrelated characteristics, based on the size and context of the business unit, observations made during the pilot study indicated that formal communication and the proactive exchange of information improved cooperation in the studied facilities management environments.

The network analysis results (Paper 2) indicated that formal connections affected workplace network connectivity in three ways: (1) formal connections led to stronger and information-intense informal connections; (2) network functions that were connected through formal links had a better foundation for sharing the mutual goals of supporting core businesses, and (3) formal connections were readily compensated with informal connections in the cases of long-term interaction. The functions without formal connections were more disposed to the management's failure to look at workplace issues broadly than those with existing formal connections.

The axial coding suggested that formal cooperation and continuous improvement based on joint strategy alignment, operational planning, service delivery and monitoring should be established at all network service organisation levels. A general need for formal multi-level interaction and cooperation existed in all four studied workplace networks.

The pilot study phase indicated that future research should be expanded towards the strategic interaction between the people and organisations of workplace networks. The results implied that the organisations having more strategic-level interaction did not suffer from the dimensional problems identified in the first phase as significantly as those having less interaction (see Table 6 and Appendix 1).

3.2.6 Insights for the Case Study

Regardless of the popularity of the method, the conducted network analysis of the pilot cases did not explain the total value of centralised planning and strategic interaction between the different workplace and service functions. Despite acknowledging the need for formal interaction, the strategic roles and connections between user, owner, and service organisations remained unsolved. The empirical observations and the parallel literature review indicated a need for network analysis on a larger scale and at a strategic level.

Network analysis and the identification of network holes contributed to identifying gaps in information flows, the inefficient use of resources, and the failure to generate new ideas within the studied networks (Krackhardt and Hanson, 1993). Network analysis was used as a viable tool for identifying the connections and the key roles (Cross and Prusak, 2002; Cross et al., 2002) between workplace, property management, facilities management, and service functions in complex organisation environments. When identified, the different key role players can be assigned into cost-efficient and practical forms of interaction.

It was recognised that in the final case study, further network analysis should be conducted focally from the user organisation's headquarters, expanding towards the decentralised business units and external owner and service provider networks surrounding them. The relevant lines of questioning should focus on the external network's interaction with the user organisation on levels of both the centralised strategic client and the decentralised business units. The relevant questions are: first, how are corporations and their business units structurally and relationally embedded (Andersson and Forsgren, 2000; Andersson et al., 2002) in their external networks? Second, how can organisations, functional units, and individual managers create connections that foster formal interaction on different levels of network service organisation?

In the exploratory pilot study on business unit connections, the strategic, operational, and functional connections in network service organisations were chosen as the objects for examination. According to O'Mara (1999), the level of business units is the best level at which to examine the value chains of CRE and FM. This might be true in most cases, but the business unit level network analysis of people was inadequate for explaining the general business logics that controlled network cooperation on the inter-firm level. The interviewed operational staff did not have control over the financial exchange and trust building on the organisation level. The best characteristics of interaction and cooperation in the telecommunication firm network examined in the pilot study had resulted from strategic level inter-organisational networks. In the context of the theoretical framework of the network service organisation, this means that the most critical improvement area for interaction is the alignment of strategy between the strategic clients and the network integrators (Figure 8). Therefore, the pilot study suggested that workplace network interaction could be improved substantially by joint strategy alignment would serve as a research proposal for the final case study.

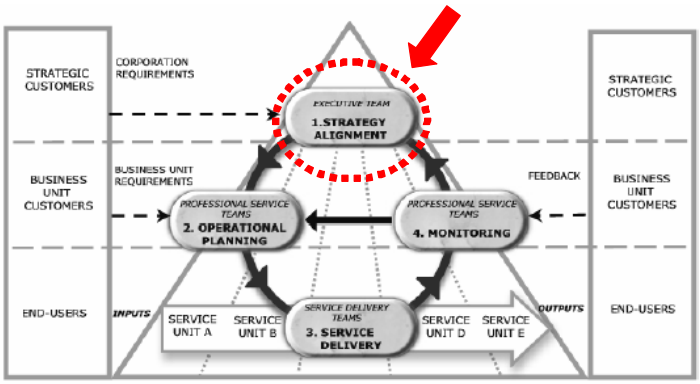

Figure 8 Selected core category for the final case study

3.3 Final Case Study – Refinement

The final case study comprises originally three separate papers. Papers 3-5 describe the role of Senate Properties, a Finnish building owner organisation, as the focal firm in the workplace network that consists of triadic inter-organisational network roles of service providers, building owners as contract managers, and end-users of services. The aim of the final case study is to refine the theoretical findings of the earlier phases. The general research question in the case study is *"how to manage workplace network interaction of triadic alliance relationships?"*

Paper 3 describes the overall role of Senate Properties in facilities management and construction business from the perspective of network organisation governance. The role of a building owner organisation, as the focal firm in a network organisation, is described on the basis of literature review.

Papers 4-5 describe the snapshot case study (Jensen and Rodgers, 2001, pp. 237-239) of the role of Senate properties as a focal factor reviewed on the basis of two network analyses. Paper 4 (Tuomela et al., 2005) describes the role on a more general level and Paper 5, on the other hand, presents a more detailed account. The objective of Paper 4 is to describe how the new forms of facilities service supply and inter-organisational relationships should be managed from the building owner's organisational perspective.

The purpose of Paper 5 (Tuomela and Toivonen, 2004) is to illustrate strategic interaction between workplace network actors, *i.e.* service providers, contract managers, and end-users of services, around the Uusimaa regional tax office which is located in a building managed by Senate Properties: (1) by analysing the distinctive features of interaction between actors in the workplace network; (2) by describing the interaction of joint value creation relating to a workplace network strategy; and (3) by recognising the fundamental steps involved in workplace network strategy building.

3.3.1 Literature Engagement to the Final Case Study

The appended Paper 3 works as a connective article in terms of literature between the proposal presented in the pilot study, "workplace network interaction can be improved substantially by joint strategy creation", and the final case study at Senate Properties. The paper examines the drivers that affect governance network organisations from the perspective of the building owner, but also elaborates the common importance of strategic planning in both network and facilities management literature.

According to a network management literature review, the general driver of network organisation formation is that the network organisations are formed of internal and external teams that share and commit to joint objectives and shared goals on all network levels (Miles et al., 1995, 1997; Achrol, 1997; Achrol and Kotler, 1999). The principle idea in this is very similar to the idea of the strategy alignment in the network service organisation.

Alexander (2004) lists the following implications for the strategic role of the facilities management organisation: formulating and communicating a facilities policy; planning and designing for the continuous improvement of service quality; identifying business needs and user requirements; negotiating service level agreements; establishing effective purchasing and contract strategies; creating service partnerships, and systematic service appraisal quality, value and risk. The principle idea in this is also very similar to the idea of the strategy alignment in the network service organisation. It may be interpreted of Alexander's view that the guidelines for the operational teams in the network service organisation should be established on the strategic level. In the final case study, the role of a building owner organisation, Senate Properties, as a strategist is studied within a triadic alliance of building owners, end-users and service providers.

3.3.2 Selection of the Final Case study

In the final case study, a core category of joint workplace network strategy building was chosen as the category of data collection and analysis. The data collected in the earlier phases indicated only the importance of the strategy building, but it did not provide enough information about the strategic interaction and joint strategy building.

The final case study was conducted by examining the triadic network of Uusimaa Regional Tax office as a building-user organisation, Senate Properties, and the service provider organisations at the headquarters of the Uusimaa Regional Tax office. The headquarters is located at largest multi-tenant office building owned by the Senate Properties. Qualitative data was collected in two separate network analyses among three types of network actors during the period 08/2003-04/2004. The interviewed people were selected professionals that had a cooperational role in the case workplace network (see Appendix 5).

Selecting the final case study took place naturally since the author of the dissertation joined the case study firm Senate Properties in Finland to work as a development manager responsible for the development of service and partnership networks. Senate Properties is a government owned enterprise responsible for managing the property assets of the Finnish state and for letting premises. The strategic intent of Senate

Properties is to create a business network with clients and suppliers to support the use of common information, to promote the introduction of new services and to control service quality.

Senate Properties has quite recently begun to consider itself as a service company instead of a company concentrating on providing mere physical facilities. Facilities are perceived as a part of the total offering, where the services have a remarkable role. The company has developed a partnership aiming at long-term contracts and containing shared objectives and projects, all of which help create a consistent business model for Senate Properties. A partnership model is built for the network parties to interlink their processes and those of the client.

In spring 2004, the National Board of Taxes, one of Senate Properties largest clients, was creating a new strategy for itself to respond to the needs of the changing environment. All regional tax offices are facing similar changes in their core and support functions. Organisations around Finland are facing a high retirement rate which necessitates new recruitment policies and changed needs for the entire organisation in order to acquire replacement workforce. The tax office services are changing from local services to web-based and centralised call-centre tax services. The top management has recognised a major change affecting all support functions: tax offices want to focus only on taxes.

In the case study, the entering phase of a ‘triadic alliance’ is analysed by using two separate qualitative network analysis studies. The results of the networks analysis are displayed with the simultaneous development plans for the future network service organisation management. The development plans are based on on-going business development.

3.3.3 Data Collection with Two Network Analyses

In this final case study, two network analyses were conducted among the three types of network actors. The first network analysis is conducted between the customer organisations, Uusimaa Regional Tax Office, and the building owner organisation, Senate Properties. The second network analysis is conducted between the service providers and the contract managers of Senate Properties and Uusimaa Regional Tax Office’s in-house purchasing organisation. In this context, the triadic alliance network means the network of a) customer organisation, b) building owner organisation and c) service provider organisations (Figure 9).

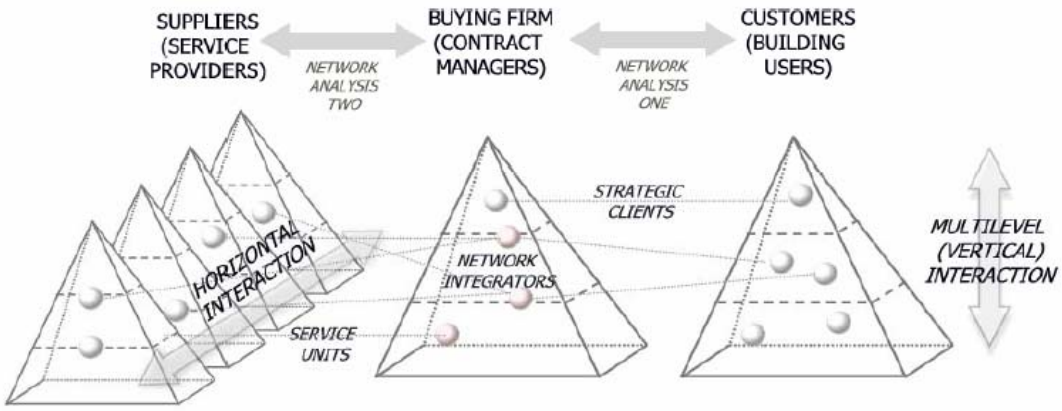

Figure 9 Triadic alliance network of the case study

Grönroos (1996) suggests that partnerships and networks are formed of horizontal and vertical connections – although they are described and discussed separately in focal firm contexts (Möller and Halinen, 1999). Vertical connections in this context refer to client-supplier coordination and horizontal ones to connections between different functional service activities in the studied triadic network alliance.

During the two separate network analyses, the customer organisation, Uusimaa Regional Tax Office, and Senate Properties are entering an extraordinary alliance relationship. By mutual agreement, the Senate Properties' role is changing from a traditional building owner to a workplace service provider depending on its ability to orchestrate a complex service provider network.

The data collection of the final case study consisted of two phases. First, a dyadic network analysis was conducted, with in-depth interviews at two levels of the alliance between Uusimaa Regional Tax Office and Senate Properties. On a strategic client level, the executives that defined the relationship and who were responsible for the alliance formation and goals were interviewed. At the business unit level, the service buyers that were to initiate the implementation of the alliance relationship were also interviewed.

The social network analysis method was selected because of the need to understand the process of value creation and the channels of knowledge flow on, and between, strategic and operational levels through the informal network of the dyadic alliance between the building user and owner organisations. The data was collected by conducting nine interviews among the key participants involved with the alliance formation and the current operational service processes (Appendix 5). Four of the interviewees were

chosen from the strategic level and five from the operative level. Interviews were semi-structured, with a set of questions covered in each interview in a flexible way. The study was conducted during the period 08/2003 - 04/2004 by researchers of the Innovation Management Institute, BIT Research Centre of Helsinki University of Technology.

In the second network analysis, the facilities management service network around Uusimaa Regional Tax Office, administered by Senate Properties was studied with a separate network analysis by the Small Business Institute, Turku School of Economics and Business Administration. The network analysis that was conducted considered three types of network actors (Figure 10). The first actor group, customer organisations, had one representative, Uusimaa Regional Tax Office. The second actor group, buying organisations, had two representative organisations, Senate Properties and Uusimaa Regional Tax Office's in-house purchasing organisation. The third actor group, suppliers, had five representatives. The empirical data for this analysis were collected during the period 08/2003 – 12/2003 by using semi-structured interviews with service providers and the contract managers (Appendix 5).

The data collection was performed using the investigator triangulation method. Multiple research teams (Eisenhardt 1989, p. 538) from BIT of Helsinki University of Technology and Small Business Institute, Turku School of Economics and Business Administration carried out their individual qualitative research projects covering different network research perspectives of the case network. Research on the case workplace network was considered as simultaneously both exploratory and descriptive (Robson, 1993), in order to increase the shared knowledge of the novel area of network research. Since cooperation and strategic interaction between different workplace

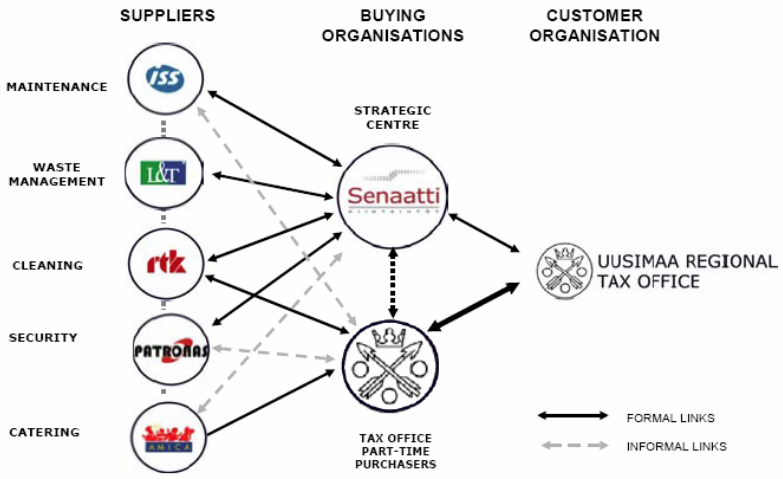

Figure 10 Network of the network analysis two

network actors have received only limited attention, an inter-disciplinary and explanatory analysis of strategic activities and information resources was found appropriate for the new field of the two conducted network analyses.

A thorough case study analysis of a particular process will require the use of the researcher's personal observations resulting from presence, participation, or even intervention in the actual process to be examined (Gummesson 1993, p. 73). Parallel to the network analysis processes, on-going relationship development was continued at various levels across the partnering organisations by the author of this dissertation. The joint strategy creation and network relationship development by the top management and operational meetings of the middle management were observed. Third, descriptions on how Senate Properties attempts to govern the triadic alliance relationships are presented in the discussion chapter.

3.3.4 Results of the Network Analyses

The network analyses indicate that the networks of building users, owners, facilities management parties and service providers can improve their interaction and cooperation by (1) multilevel interaction building, (2) mutual orientation building in groups and (3) formation of boundary-spanning roles. A model or a framework for interaction building in triadic networks is therefore presented that derived from a knowledge base that can better explain (1) the requirements of core businesses, (2) key real estate and facilities services attributes and (3) options evaluation to meet dynamic changes (Figure 11). The distinctive features of facilities management networks are identified in the following paragraphs.

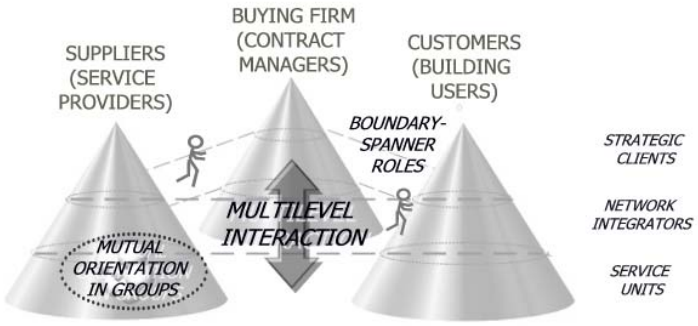

Figure 11 Framework for interaction building in triadic workplace networks

The first network analysis indicated that the strategic interaction was limited only to the dyadic relationship. Service providers were not involved in co-operating with one another. Most of the interaction took place at the operational level, but the strategic level connections in the studied case transformed the relationship from a common relationship to an alliance. The strategic clients, senior executives of the building user and owner organisations, defined the meaning of the alliance relationship and signalled its importance to the triadic network. However, the operational connections operated as they were the only existing strong link to the service provider network. The service issues were recognised by strategic clients, but were planned only superficially, since the contract management of the services were decentralised at the operational level.
The second network analysis indicated that service providers at Uusimaa Regional Tax Office had differing views about the multi-level interaction. A number of service providers saw only a need for mere operational communication and proactive exchange of information. Service providers with opportunistic intentions were also interested in strategic interaction. Their focus was on having a stronger network position and a clear intention to coordinate the service provider network.

In general the network analyses implied that top management's involvement in a triadic alliance has a much more significant role than merely appointing network integrators to implement the strategies for the network. Both conducted studies indicated that teamwork enables more effective planning possibilities in new situations. As alliance firms are launching joint alliance strategies, both formal and informal contacts and team meetings are important in the entering phase. Existing strong informal connections are not necessarily sufficient in the situations where cross-discipline innovations are required. The network analyses therefore suggested that there are three propositions regarding the improvement of interaction and cooperation among workplace network actors.

Proposition 1: Multilevel interaction building. Joint formal planning leads to stronger and information-intense connections at both the centralised strategic business level and the decentralised operational business unit level of service delivery.

The network analyses indicate that, in the entering phase of an alliance, formal interaction building is beneficial in a fragmented business environment. Hutt et al. (2000) observes that, as a strategic alliance evolves, personal relationships increasingly supplement formal role relationships and informal psychological contracts increasingly substitute for formal legal contracts. Contrary to evolved and static relations, the final case study indicates that the changing environment, where continual improvement of quality and complete rethinking of all processes are demanded, requires new forms of

formal cooperation in order to create dynamics within the deficient existing relationships.

One argument for multilevel interaction building in a facilities management environment is, as argued by Håkansson's et al. (1999), that, if a relationship has more connections, there are more interfaces where network learning can appear. The final case study specifically suggests that such learning should take place in groups rather than in dyadic client-supplier relationships. The group, team or task-force interaction, such as in the steering group of multiple workplace service professionals described in network analysis two, can be more multidimensional and multifaceted compared with interaction taking place in a dyad.

The studied building user and owner organisations had a long history working with each other. However, both strategic and operational personal relationships were relatively new during the conducted interviews. The first network analysis indicated that the trusting relationship and interaction on the strategic level also created open and prompt communication between network members at the operational level. As soon as the strategic clients of the building user and owner organisations agreed about alliance formation at the operational level, open cooperation started. Trust at the strategic level initiated the dyadic alliance relationship that defined the shared goals for premises and service delivery.

The second network analysis indicated that trust in the service provider network suffered from an aggressive strategic interaction of specific service providers (see paper 5). The focal firm's challenge is to identify those service providers that are disposed towards joint interaction and to avoid attempts to create interactions with those service providers that have transactional, instead of relational, interaction needs for their business relations. However, the lack of knowledge of the changing environment and strategic integration greatly tarnished the trust in the alliance relationship.

Trust has been under the spotlight of organisational studies since the mid '80s. Many researches have proven the importance of trust in business management (*e.g.*, Granovetter 1985). In our studies, trust was seen to emerge from the informal connections and especially from the mutual orientation (Johansson and Mattsson, 1987) in the groups formed in the network. People with different backgrounds and fragmented roles in the network were able to find a common language in the observed groups. The final case study therefore suggests the following proposition.

Proposition 2: Mutual Orientation Building in Groups. Mutual orientation creating trust and shared policies can be established in groups in fragmented networks.

The results of the first network analysis indicated that the formation of the customer manager's boundary spanner role increased and deepened the vertical knowledge exchange between strategic and operational customer service. The building user and owner organisation's ability to interact and plan joint issues increased at both the strategic and operational levels because of the formation of the boundary spanner role of the customer manager. Partly because of their personal characteristics, the customer manager and property manager were able to create together an open and trustful communication with external parties in the studied network.

The second network analysis indicated that the boundary spanner roles of service providers emerged from participation to formal meetings that were originally established for the building users and the owner. In the fragmented environment, informal relations were important, but the people that also had formal connections, such as roles in joint meetings and teamwork, acted as boundary spanners between horizontal service tasks and also had an informal role that affected vertical client-supplier relations. The studies indicated that, regardless of the network member's background, the formal interaction on both strategic and operational levels had a positive impact on boundary spanner role creation. The final case study therefore suggests the following proposition for boundary-spanner formation in triadic networks.

Proposition 3: Strengthening communication with boundary-spanning personnel. Communication can be strengthened and network connections built stronger by the formation of boundary-spanning personnel that share information with supporting core businesses.

3.3.5 Selective Coding

In autumn 2004, a selective coding was conducted on the basis of dimensions created in the first phase (Paper 6, Tuomela, 2005b). Strauss and Corbin (1990) define selective coding as selecting a core category and creating a story line about the core category that links other categories to the core. Selection of the core category and linking it to other categories involves the application of the "paradigm model" at the level of categories. In this dissertation, selective coding is based on the selection of the core category of joint workplace network strategy building. The case description of the network interaction and cooperation improvement is completed in a case network (at Senate Properties).

In addition to the two network analyses, the eighteen qualitative interviews of the final case study are selectively coded on the basis of the dimensions identified in the open coding (Table 8). The interviews included in the final case study also verify and refine

the dimensional proposals identified in the earlier phases. In general, a need for interaction and cooperation improvement existed, but the existing contracts and individual mindsets did not the support noticeable improvement in terms of management in the studied network.

Table 8 Results of the selective coding based on core category of joint strategy alignment (presented in detail in Appendix 4).

Internal Client-Supplier Relations *Vertical cooperation*	**Customer relationship management**	**Service-to-service relations** *Horizontal cooperation*	**Quality management**
Dimensional proposals:			
Joint strategy for purchasing the services should be established at the strategic level of the triadic network	Joint customer relationship management should be established at the strategic level of the triadic network	Formal cooperation should be established at the strategic and the operational levels of the triadic network	Strategic guidelines for quality management should be established in the triadic network (based on the strategic aims)

3.3.6 Results of the Final Case Study

The case study verified that the presented roles of strategic clients, network integrators and service units existed in the final case study environment. The proposed framework was found a useful starting point for companies to study and improve the cooperation and interaction in the entering phase of an alliance relationship. The conducted network analyses indicated that the facilities management parties should pursue cooperation in three ways: (1) multilevel interaction building (2) mutual orientation building in groups, and (3) formation of boundary-spanning roles.

The interviews included in the final case study also verify and refine the dimensional proposals identified in the earlier phases. The final case study indicated that, in a complex triadic network of several workplace service professionals with different backgrounds, the conceptualisation of joint strategies is challenging. From the perspective of network management, the undeveloped network concepts and undefined transaction and role specifications are problematic. However, the primary development area was the interaction between the network members. It is suggested here that network concepts and undefined transaction and role specifications would remain undeveloped unless the network members start to interact and cooperate with each other in a more systematic manner.

The case study indicated that those network members who interacted on a strategic level were more capable of adapting to customer demands and therefore more capable of producing added value to both vertical and horizontal interaction and cooperation and quality management in the studied network. The strategic roles produced opportunities for specific workplace network members to become more central than the others in comparison with the network members without strategic interaction.

4 SATURATION OF RESULTS

According to Glaser and Strauss (1967) and Strauss and Corbin (1990), the basic idea of the grounded theory approach is to read (and re-read) a textual database (such as a corpus of field notes) and "discover" or label variables (called categories, concepts and properties) and their interrelationships. The ability to perceive variables and relationships is termed "theoretical sensitivity", and it is affected by a number of factors including one's reading of the literature and one's use of techniques designed to enhance sensitivity.

According to authors discussing grounded theory (Glaser and Strauss, 1967; Pandit, 1996; Strauss and Corbin, 1998), saturation is the key to knowing when the researcher has collected enough data. Fernandez (2004) describes the grounded theory process as a, hermeneutic, spiral that starts by collecting slices of data in a substantive area of enquiry which are then codified and categorised in a continuous process that moves toward saturation and results in the theoretical densification of concepts represented by a substantive theory. According to Glaser and Strauss (1967, p. 65.), saturation in grounded theory research is reached when no additional data whereby the researcher can develop properties of the category are being found. In other words, one begins to hear the same things from participants when saturation occurs. Similar to the identification of the theoretical saturation (Pandit, 1996; Eisenhardt, 1989, p. 541) suggests that, after performing within a cross-case analysis, replicating concepts and possibly even relationships between variables begin to emerge. Once this has been achieved, the next step is to compare systematically, and in an iterative process, the emergent frame with the evidence from each case, so that the emerging hypothesis may be corroborated or falsified.

In this dissertation, the general research question was “How can the workplace networks improve their interaction and cooperation?” On the basis of the results yielded by the open and reflective coding in the three presented phases, the most evident way to improve the interaction and cooperation of workplace networks is through formal interaction. Such formal interaction took the form of control mechanisms such as teamwork, task forces and joint strategy alignments.

The idea of building formal interaction was already generated in the conceptualisation phase of the theoretical framework generation. The theoretical framework phase generated ideas according to which joint customer relationship management, formal cooperation between the clients and the suppliers (vertical cooperation) and joint service delivery (horizontal cooperation) could be improved by building formal cooperation.

The original aim of the four pilot study cases was to test the generated network service organisation framework. However, the main result of the pilot study network analysis was that "*without formal connections, the functions of the network service organisation faced barriers to both vertical and horizontal interaction.*" In general, formal connections such as cross-functional teams, task forces, and liaison roles increased the number of strategic, operational, and functional connections between all functions in the network service organisation. Although the need for formal interaction was recognised, the strategic roles and connections between user, owner, and service organisations remained unsolved.

Refining the final case study aimed at describing the areas for improving interaction at the strategic level from the perspective of Finnish building owner organisations. The final case study indicated that, in a complex and cross-disciplinary triadic network, the conceptualisation of joint strategies is challenging. From the network management perspective, the undeveloped network concepts and undefined transaction and role specifications are problematic. However, building formal interaction between the network members was emphasised as the primary development area. It was suggested here that network concepts and undefined transaction and role specifications would remain undeveloped unless the network members start to interact and cooperate with each other in a more formal and systematic manner.

As a result of constant comparison of the results in each phase, saturation was reached after cross-phase analysis and systematic coding. On the basis of this saturation, the following hypothesis may be shaped around the network service organisation framework (Figure 12):

Hypothesis: Fragmented workplace networks with formal interaction mechanisms are more capable than those without such mechanisms of cooperation, and are therefore more adaptive to customer demands and changes in the business environment.

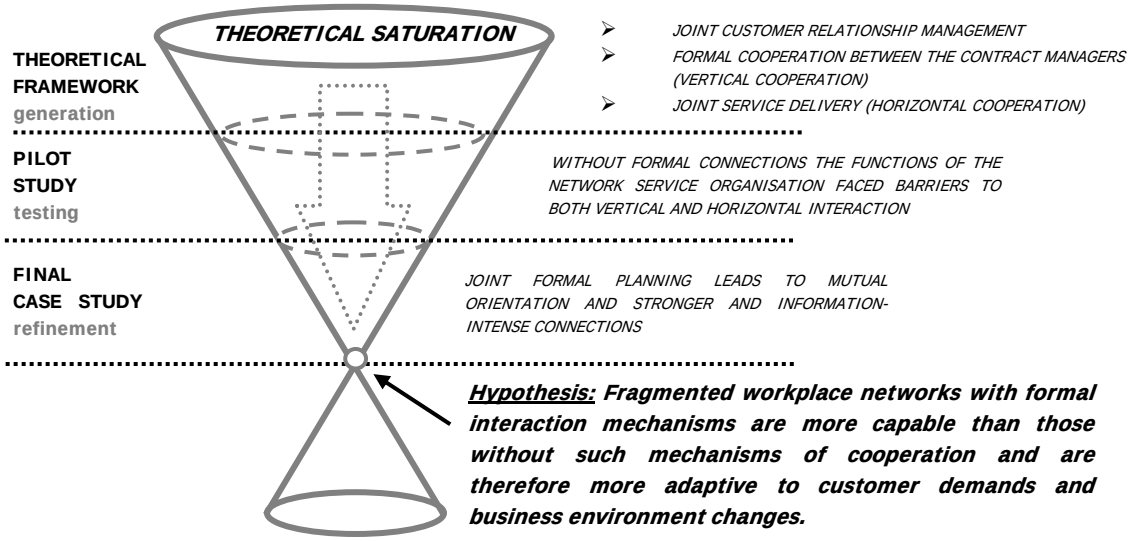

Figure 12 The theoretical saturation of the research phases.

5 DISCUSSION AND CONCLUSIONS

5.1 Contribution of the Research

5.1.1 Implications of the Emergent Research Process

This dissertation has introduced a process of grounded theory building in facilities management research that focused on answering the research question "*how can the workplace networks improve their interaction and cooperation?*" As Charan (1991) describes, networks and network organisations are a subjective area of research. The term workplace is relatively new in the literature. A workplace network was defined in this dissertation primarily as a cooperational network of several core business support functions such as corporate real estate management, facilities management, property management and different out-tasked services. Secondarily, the workplace network meant a network of business support people and organisations that emerged from personal contact between the organisations and their personal links to the supported customers and businesses. Together, these people and their organisations formed a network service organisation around the supported organisation and people representing it.

In the beginning of the research process, the networks constituted a research area that was only recognised and superficially explored in the workplace environments. A three-phase research process suggests that in fragmented workplace networks formal

interaction mechanisms can significantly improve the interaction and cooperation. During the modified grounded theory process, a theory of network service organisation interaction was generated, tested and refined. In order to bolster the theoretical discussion above, the following section focuses on how the data and network service organisation framework help answer the guiding research questions delineated in the Introduction.

The first research phase called "theoretical framework" focused on explaining "*who are the different members and what their roles in the workplace network?*" A novel theoretical framework of network service organisation was inductively generated from the interview data and deductively extended from the previously developed paradigm models of CRE and FM. The generated theoretical framework provided a novel way to assess the roles of the network actors behind the complex environment of workplace networks. The network service organisation roles of strategic clients, network integrators and functional service units were introduced with their counterpart roles in the customer organisations (see Paper 1). Moreover, a generic governance model for network cooperation was introduced that suggested that strategic clients, network integrators and functional service units should interact and form formal cooperation entailing the building of teams and task-forces on three presented network levels. The theoretical phase proposes that workplace organisations should have cooperation mechanisms where the contract management and performance standards affiliate to all actors of the network service organisation. The results of the first research phase also proposed that people and organisations with similar roles of the network service organisation should develop planning, management, service delivery and general information exchange in a customer-focused manner instead of company-driven competitive advantages.

The purpose of the second research phase, called "pilot study", was to explore "*how the different workplace networks are connected?*" The phase tested the qualities of the generated framework and explored the qualities of the workplace network interaction and cooperation in four pilot study environments. The pilot study analysed the connections of the four case environments in a unique way by using network illustrations and analysis for comparison. The results yielded by the pilot cases supported to a great extent the logic of the network service organisation framework. Even though the identified network service organisation roles had interrelated characteristics, based on the size and context of the business unit, the pilot study suggested that formal communication and the proactive exchange of information improved cooperation in the studied facilities management environments. The results of the network analysis (Paper 2) indicated that formal connections affected workplace network connectivity in three ways: (1) formal connections led to stronger and

information-intense informal connections; (2) network functions that were connected through formal links had a better foundation for sharing the mutual goals of supporting core businesses, and (3) formal connections were readily compensated with informal connections in the cases of long-term interaction. The functions without formal connections were more disposed to the management's failure to look at workplace issues broadly than those with existing formal connections. Furthermore, the pilot study phase indicated that further research should be expanding towards the strategic interaction between the people and the organisations of workplace networks.

The third phase called "Final case study" is a single case study that is conducted in order to answer the question "*How to manage workplace network interaction of triadic alliance relationships?*" The third phase refined the qualities of the theory of network service organisation interaction. The network service organisation around a Finnish real estate owner organisation, Senate Properties was studied from the perspective of strategic interaction between the workplace network actors: service providers, contract managers, and end-users of workplace services. The third phase of final case study indicated that the networks of building users, owners, facilities management parties and service providers can improve their interaction and cooperation by (1) building multilevel interaction , (2) building mutual orientation in groups, and (3) forming boundary-spanning roles. The final case study indicated that in a complex and cross-disciplinary triadic network, the conceptualisation of joint strategies is challenging. From the perspective of network management, the undeveloped network concepts and undefined transaction and role specifications are problematic.

5.1.2 Theoretical Contribution and Novelty of the Study

This dissertation gained added academic value by presenting a novel framework that facilitates understanding all the workplace network actors involved in business support services. From the point of view of network and alliance research, the industry is in an exploratory stage where the business and operational environments are still being conceptualised by various models and frameworks. According to Then (1999), the model and framework building must be derived from a knowledge base that can better explain the requirements of core businesses, key real estate and facilities services attributes, and options evaluation in order to meet dynamic changes. He highlighted three themes that point to the need for industry research: (1) the need to link real estate and facilities decisions to corporate research; (2) the need to proactively manage functional space (and related services) as a business resource; (3) the need to develop conceptual models and frameworks for integrating the emerging evaluation tools and management development skills in business resource management, as they are applied to the provision and management of the corporate operational assets and associated

support services in their business settings. To some extent, this dissertation contributed to all the three highlighted themes.

The ontological perspective of this dissertation involved the interpretivism of multiple specific organisational network realities studied from an epistemological stance that sees inter-organisational, social and business network and workplace management (here defined as CREM and FM) theories as integral activities. Prior to this research, these theories have mostly been studied separately from an epistemological stance. Since from an epistemological stance the inter-organisational network management and workplace management (CREM and FM) theories have been separated, the generated framework of network service organisation provides new insights on the connections of two disciplines. Furthermore, the study contributed to the strategic planning of workplace business relationships by presenting an 'interactionist' approach to the joint cooperation building. In addition to providing integrated insight into the domain of workplace network interaction management and cooperation, the findings of this study also enlighten a number of other literatures, including the domains of general workplace management and inter-organisational network management.

Joroff and Bell (2001, p. 8) propose that in the new workplace environment of different business support functions, information must flow freely between groups with connected functions and up and down the corporate hierarchy. While workplace management issues are increasingly understood, the idea of workplace environment in this dissertation is lead from this general proposal. This dissertation introduces a perspective of network and service management to the workplace paradigm. Prior to the papers of this dissertation, the combination of network phenomenon and workplace management has epistemologically been integrated mostly in research literature of space as a business resource (*c.f.* Becker and Steele, 1994; Haynes and Price, 2002, 2004).

This dissertation contributes similarly to the general inter-organisational network management. The proliferating network paradigm has been studied in various organisational settings in several industries by using various types of network analysis methods from the late seventies (*e.g.*, Allen, 1976; Farris, 1979; Ticky and Tushman, 1979) right up to the present day (see Borgatti and Foster, 2003). Hutt et al. (2000) describe that as strategic alliances evolve,"(1) personal relationships increasingly supplement formal role relationships and (2) informal psychological contracts increasingly substitute for formal legal contracts." A similar notion was made during the pilot and final case study analyses. However, in a characteristically fragmented business environment, the personal relationships might exist, but they lack formal mechanisms from the perspective of business network interaction and cooperation. The conducted research suggests that formal interaction mechanisms increase the informal interaction

and cooperation in the fragmented environment. In other words while network actors do not naturally have organised interaction and cooperation, the formal interaction mechanisms can intensify cooperation within network organisations.

On a general level, this dissertation contributes to many exchange theories of organisational behaviour sciences (Homans, 1950; Blau, 1964; Adams, 1965) arguing that the structure of an organisation may be understood if we adequately understand the elementary social behaviour of the organisation. Our article argues on a general level that post-modernistic organisations (Daft and Lewin, 1993; Heckscher, 1994; Ashkenas et al., 1995), such as network, boundaryless, temporary, hybrid and virtual organisations that are fragmented and managed informally can benefit from formal control mechanisms and meetings.

5.1.3 Practical Contribution

The managerial and practical aspects of this research have been visible during all the three research phases. The generated framework of network service organisation has been widely acknowledged in the Finnish CRE and FM businesses and international professional conferences. Many of the research project steering group organisations have used the framework and the governance model as a foundation in several discussions and negotiations relating to contractual interaction and cooperation. Variations of the framework have been attached to several bidding documents in the Finnish facilities service industry. The results of the theoretical framework phase have been a target of significant professional attention and a source for further development.

The pilot study phase contributed to all pilot study organisations. The results of the network analyses were analysed with key stakeholders from all four studied network organisations. The building of multi-level interaction was recognised as a high priority in a fragmented FM environment where the management roles were scattered between various parties.

The results of this dissertation have almost daily or weekly yielded research applications in the final case study environment, Senate Properties. The author's personal engagement as a development manager at Senate Properties, who is responsible for the development of service and partnership networks, ensures that the practical contribution of the results of this dissertation continues in the future as well. The contribution is discussed in more detail in the last section of this dissertation: areas for further research.

5.1.4 Limitations of the Research

As in the case of inductive case studies, there is a potential for the study to result in idiosyncratic findings that might be difficult to extend to other organisational contexts. Each organisation and network is unique and has its own internal and external factors and influences. The challenge of an interpretive research is to exclude these factors form the theory-building and provide generalised results. In this research the data was gathered from individual workplace networks, and therefore, not all of the results are suitable for generalisation. The workplace networks are also dynamic, and it follows that the results of snapshot case studies are not valid for long.

In interpretive research, multiple realities can exist around a single phenomenon because those involved have different interpretations of the phenomenon. This leads to different people reaching different conclusions about the causality of the phenomenon, the implications of the phenomenon, and the relationships other phenomena have with the focal phenomenon. (Corley, 2002, p. 25) The interaction in a workplace network is a complex phenomenon. Therefore, a large amount of interview data could have produced several individual theories. Along with the systematic data analysis procedures, creativity and random ideas were a part of the theory-building process.

Another potential limitation in inductive research involves the biases the researcher brings to the field experience. These aspects of bias were persistently reduced with multiple triangulation methods, especially with investigator triangulation. However, during the four-year research process, which began with generating the theoretical framework, the author started to view several issues through the ‘network service organisation’. This polarity was especially strong during the pilot study process. Additionally, there were several respects in which the researcher could have been misled by his personal beliefs and the limited data provided by the informants. On the other hand, the participant observations as a network member in the final case study helped in perceiving how much the personal backgrounds, believes and attitudes of the author himself, the fellow investigators and the network members affect the studied phenomenon. All in all, there is confidence that the data gathered in the three research phases were trustworthy and form a solid foundation for the modified grounded theory of the study.

5.2 Methodology and Trustworthiness

5.2.1 Research Approach

In this dissertation, the theory emerged from the researcher's personal interpretations with the aim of improving the workplace network interaction during a four-year period divided into three research phases. In this research, the conducted research of network service organisation interaction was based on interpretivism, hermeneutics and abductive reasoning. The used research methods have been highly qualitative in all research phases.

The collected data of the dissertation was inductively analysed using the naturalistic inquiry method (Lincoln and Guba, 1985) and the constant comparison technique (Glaser and Strauss, 1967). The research process was based on Strauss and Corbin's (1990; 1994) inductive and deductive reasoning. The presented research process aimed to explore and explain a complex workplace network environment and phenomenon in order to render the subject matter understandable and to develop a new theory inductively from the material that corresponds with reality. The deductive phases at the end of each phase were mainly based on the critical reflection on collected data and empirical statements, and they were compared with existing theories with literature reviews.

In the first phase of the research, it was considered appropriate to begin the process of generating the theoretical framework with inductive data analysis. Prior to the data collection and analysis, the existing theories of the CRE and FM literature were acknowledged, but they were considered inadequate to explain the network phenomena in the workplace networks. Before generating the theoretical framework, there was little empirical research focusing on the interaction in FM and CREM organisations. The earlier frameworks focused mainly on describing the formal connections and relationships between the parties within the business environment. However, a number of related frameworks were generated prior to the network service organisation. For example, the Generic FM model of Peter Barrett (1995, p. 40-41; 2000) may be considered to have an ideology similar to the one relating to the generated network service organisation. In this research process, Barrett's model acted rather as a basis for pre-understanding than as a basis for deduction for a theory. Furthermore, since pre-understanding the related theoretical areas of a phenomenon is necessary before undertaking the grounded theory research (Kvale, 1996; Creswell, 1998), the inductive data analysis and generating a novel theoretical framework, based on a secondary deductive literature synthesis, was considered appropriate in the beginning of the research.

In the pilot study, the sole use of hypothetic–deductive network analysis methods would have not served the purpose of exploring the network phenomenon in the studied workplace environments. Rigor measuring of traditional sociometric characteristics such as density, centrality, cores, positions, cliques, clusters and roles (Scott, 2000) would not have explained the research problem: *"How can workplace networks improve their interaction and cooperation?"* Neither any individual hypotheses nor deductive sociometric measures could have not have been able to describe the substance and the significant qualities of the unexplored workplace environments. Therefore, the multiple case study approach was a suitable research strategy for explaining the comprehensive research problem and for testing the several dimensions of the network service organisation framework.

In the beginning of the of the final case study phase, much attention was given to deciding whether to refine the theory inductively or deductively. The unexplored core category of joint strategy alignment was selected as a more important approach for the final case study than simply proving that formal interaction was important with hypothetic-deductive approach. Testing the relation of formal and informal interaction was considered a limited means for explaining the comprehensive research problem of the entire research process. The inductive data collection and analysis was a more appropriate approach for filling the gap of strategic interaction, a very central issue for the workplace network interaction and cooperation that was only vaguely acknowledged during the pilot study phase.

In general, from the perspective of the given research problem, the inductive and deductive approach served better than deduction in explaining the basic phenomenon of workplace interaction in the beginning of each research phase. The conducted research reveals the network phenomenon and establishes that the studied workplace environments have their own unique characteristics. The research process indicates that theory emerging from the collection and analysis of data according to the central tenets of grounded theory methodology may be grounded in the complex field of qualitative facilities management research.

5.2.2 The Qualitative Characteristics of the Study

According to Eisenhardt (1989), the key criteria for evaluating inductive case study research are frame breaking insights, tests of a good theory, and convincing grounding in evidence. In terms of data analysis and the production of new insights, the three research phases generated, tested and refined the theory formal interaction and cooperation building in workplace networks. The exploratory pilot study tested and the explanatory final case study refined the dimensional proposals generated inductively in

the first phase of theoretical framework generation. The creation of the hypothesis "*fragmented workplace networks with formal interaction mechanisms are more capable than those without such mechanisms of cooperation and are therefore more adaptive to customer demands and changes in the business environment"* followed the five analytic (and not strictly sequential) stages of research design, data collection, data ordering, data analysis and literature comparison (Eisenhardt, 1989; Pandit, 1996).

The three phases allowed for scientific verifiability through re-testing of the generated theoretical framework and proposals. The overall research process generated both creative insights through network analysis and empirical validity through multiple triangulation methods. In general, the research process was highly iterative and tightly linked to the gathered data. The theory generating method approach may be considered appropriate for use in new topic areas, in this case, in the exploration of needs for improving interaction in workplace networks.

Patton (1990) identifies ten major characteristics of qualitative research. These characteristics comprise naturalistic inquiry, inductive analysis, holistic perspective, qualitative data, personal contact and insight, dynamic systems, unique case orientation, context sensitivity, empathetic neutrality and design flexibility which are analysed in the context of this research (Table 9). The research of interaction in workplace networks serves in general these characteristics.

Table 9 The qualitative characteristics of the study interaction in workplace networks (modified from Patton, 1990)

General Characteristic	Specific Characteristic of Interaction in Workplace Networks
Naturalistic Inquiry	During the three research phases, the workplace networks in their natural and open network settings. There were no predetermined constraints on the outcomes and no control over the results of the interviews.
Inductive Analysis	The comprehensive research problem was open-ended and, to answer the question, it was necessary to delve into realistic interaction of the workplace networks. There was no stated hypothesis in the beginning of the research process.
Holistic Perspective	The interaction and cooperation of the network service organisation formed a complex system that was more than the sum of its parts.
Qualitative Data	Multi-methodological data collection was conducted. The 153 interviews, focus groups and observations produced data that enabled the research of the phenomenon with multiple lenses.
Personal Contact and Insight	In the final case study, the author was professionally involved with the network as a development manager at Senate Properties, responsible for the development of service and partnership networks. The research position and the real-world interaction facilitated understanding the holistic nature of the workplace networks along with the interviews conducted by external investigators.
Dynamic Systems	The studied workplace networks were highly dynamic. The interaction of the studied network organisations has changed from the single snapshot case studies as the research progressed.
Unique Case Orientation	The dynamics of each network service organisation were different. Each network organisation was influenced by individual actors, unique contractual agreements and external connections.
Context Sensitivity	The findings were situated within the social and organisational context of the particular workplace network. The conceptualised frameworks acted as points of comparison.
Empathetic Neutrality	As a development manager at one of the network organisations, I had experience in being able to relate with the interviewed actors, but at the same time, remained objective as a researcher when it came to interpreting the relations of the interviewees.
Design Flexibility	The four-year duration of the research provided an iterative opportunity to study the findings of the earlier phases and explore new paths of discovery.

5.2.3 Trustworthiness of the Research

In general, the trustworthiness of this dissertation should be analysed form the perspectives of both grounded theory and case study. Several factors render qualitative analysis and more specifically, grounded theory methodology, a good fit for investigating the interaction and cooperation of network service organisations. While the goal for the grounded theory is to be a rigorous method based on detailed and systematic procedures for data collection, analysis and theorising, the quality of the emergent theory is also a concern. In terms of credibility, validity and rigour, it should

be observed that grounded theory is based on a systematic and formal process of data collection, analysis and theory generation (Locke, 2001; Douglas, 2003).

Analysing the trustworthiness is bolstered by the amount of time spent in the field and with the data, triangulation of data, exploring data from different sources, methods, investigators, and theories (Lincoln and Cuba, 1985; Brown et al., 2002). In this dissertation, the general analytic strategy was based on multiple triangulation methods. Yin (2003, pp. 97-107) suggest three principles of data collection for case studies: (1) *use multiple sources of evidence*, which means triangulation and that data should be retrieved from various sources of evidence; (2) *create a case study database,* which means the way of organising and documenting the data collected, and (3) *maintain a chain of evidence,* which means allowing external observers to scrutinise and judge the research process from the initial research question to the final case conclusions. Therefore, the general validity of the research was ensured by multiple triangulation methods. These guidelines act as explicit links between the questions asked, the data collected and the conclusions drawn from the data (Table 10).

Table 10 Summary of the sub-questions and principles of data collection of the research

Research phase	**Sub-question *of papers*: *"How can workplace networks improve their interaction and cooperation?"***	**Data collection: Use multiple sources of evidence (triangulation)**	**Data analysis: Create a case study database**
1. THEORETICAL FRAMEWORK - conceptualisation	**(Paper 6.** What are the dimensional proposals of improving workplace network interaction?)	Investigator and data triangulation (Focus groups and Interviews)	Open coding Role-ordered displays
	Paper 1. Who are the different members and what are their roles in the workplace network?	Theory triangulation (Literature review)	Role-ordered displays
2. PILOT STUDY OF FOUR CASES - exploration	**Paper 2**. How are the different workplace networks connected?	Investigator, theory and method triangulation (Interviews, focus groups, literature review)	Network analysis and illustrations Axial coding (Paper 6.)
3. CASE STUDY AT SENATE PROPERTIES - description	*General question: How to govern workplace networks with alliance relationships?*		
3a. Case environment analysis	**Paper 3**. What are the characteristics of the complicated business network of a building owner's organisation?	Theory triangulation (Literature review, Observations)	Coding of literature Descriptive case analysis
3b. Triadic network analysis	**Paper 4.** How to manage the triadic workplace network from the perspective of the building owner organisation ?	Investigator, data and theory triangulation (Interviews, focus groups, observations, literature)	Social network analysis /sketching Selective coding (Paper 6.)
3c. Service network analysis	**Paper 5**. b1) What are the distinctive interaction features of actors in the case workplace network? b2) What are the fundamental steps involved in building a joint workplace network strategy?	Investigator and data triangulation (Interviews focus groups, observations, literature)	Business network sketching/ analysis Selective coding (Paper 6.)

The dimensions of the trustworthiness of a grounded theory may also be assessed by describing the theory's credibility, transferability, dependability and confirmability (Lincoln and Cuba, 1985; Brown et al., 2002). In the context of a case study (Ellram, 1996, p. 104; Yin, 2003, p. 34), like in quantitative research, the trustworthiness of

research design is confirmed by maximising the similar dimensions of construct and internal validity (similar to credibility), external validity (similar to transferability) and reliability (similar to dependability). The different aspects of trustworthiness are described in the following chapters.

5.2.4 Credibility

In general, credibility is a construct that reflects how much the data collected accurately reflects the multiple realities of the phenomenon. Credibility may be assessed by analysing the researcher's prolonged engagement, persistent observations, triangulation, referential adequacy, peer debriefings and member checks (Lincoln and Guba, 1985).

Credibility in contexts of case studies has been described with construct and internal validity (Ellram, 1996; Yin, 2003). Construct validity establishes correct operational measures for the concepts being studied. The phase of research where construct validity can be tested is the data collection phase. Internal validity establishes a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships. The phase of research where internal validity can be tested is the data analysis phase. The internal validity is an analytic issue of explanatory and causal case studies (Ellram, 1996; Yin, 2003), not a major issue in exploratory and descriptive case studies.

This research aims at understanding how interaction and cooperation may be improved in workplace networks through multiple research phases. Due to the abductive and hermeneutic nature of this research, the construct validity and internal validity of the explanatory and causal results may be assessed by analysing triangulation, persistent observations, prolonged engagement, referential adequacy, peer debriefings and member checks.

Triangulation has been defined as the best way to elicit the various and divergent constructions of reality that exist within the context of a study to collect information about the different events and the relationships from different points of view (Lincoln and Cuba, 1985). The main analysis strategy utilised was triangulation. All four forms of triangulation were used during the research process. Data source triangulation focused on interviews, observations and focus groups. Investigator triangulation was used during all the three phases. Theory triangulation focused on assessing the usage of workplace and network management literatures. Methodological triangulation focused on simultaneous analytic methods of coding and network analysis.

Although observations were a secondary method of data collection, continued observations were made during all the three phases. Persistent observations mean the

consistent pursue of interpretations in different ways in conjunction with a process of constant and tentative analysis. It entails a process of looking for multiple influences and evaluating what counts and what does not count. (Lincoln and Cuba, 1985) In this dissertation, the various triangulation methods, the multiple roles of the author, and the multiple cases produced numerous interpretations of analyses that can be considered persistent.

Prolonged engagement means “staying in the field until data saturation occurs” (Lincoln and Cuba, 1985). Pattern matching and explanation building were applied in the analysis of the three phases. The general results, in Chapter 4, show the occurring data saturation across the varying research phases. On a general level, the analysis between different phases countered distortions from the researcher’s impact on the context, limited the researcher biases and compensated for the effects of unusual or seasonal events and organisational differences.

Assessing referential adequacy means examining what materials are available to document the findings (Lincoln and Cuba, 1985). During all research processes, the interviews and focus group workshops were documented. From the perspective of hermeneutic learning process, this enabled returning to the earlier phases to analyse the changing research questions in the later phases. Investigator triangulation was used in order to ensure the quality of analysis from the notes and tape recordings in each phase by different researchers.

Peer debriefings were held throughout the research phases. According to Lincoln and Cuba (1985), peer debriefing takes place with a colleague with similar status, not with a junior or a senior peer, who is outside the context of the study and who has a general understanding of the nature of the study and with whom it is possible to review perceptions, insights, and analyses. While there were various peer researchers involved in all phases, the amount of debriefing was high. The co-writers and colleagues operated as "devils advocates" who helped to test the working hypotheses and to develop the subsequent research phases and served as a catharsis during the analysis of the results.

Member checks were also used during all phases. Besides the interviewees’ checks of written reports of the interviews, the organised focus groups functioned as an efficient form of member checking. In these focus groups, the researches involved in each phase were able go to the source of the information and check both the data and the interpretation. The interviewees and other people with a holistic view of the environment were able to corrects errors, provide additional information and to assess the overall adequacy of the data in addition to individual data points.

5.2.5 Transferability

Transferability is strengthened by illuminating the research with the diverse perspectives and experiences of the participants, as well as with the contributions of the peer debriefers. This data is provided by the descriptions of the research, the participants, the methodology, the interpreted results, and the emerging theory (Lincoln and Guba, 1985, p. 110; Marshall and Rossman, 1989, p. 143). In the context of case studies, transferability is described as the external validity establishing the domain to which the findings of a study can be generalised.

Lincoln and Cuba (1985, p. 316) argue that it is the responsibility of the researcher to provide a database that enables the potential appliers to judge transferability. Due to the exploratory nature of this dissertation, it is virtually impossible to transfer all parts of the research process. Interpretivist research implicitly assumes that every person conducting a research study will have a unique interpretation of the results (Corley, 2002, p. 25; Labianca et al., 2000, p. 241), an as a consequence, the data analysis cannot be judged based on the fact whether or not the results may be replicated by another researcher. Instead, it is important that the results are representative of the interpretations of those experiencing the phenomenon under study and that they embody a plausible interpretation of the phenomenon. Thus, the important criterion for assessing interpretive data analysis is its ability to provide reasonable and plausible insight into a phenomenon so that a deeper understanding of the phenomenon may be gained.

During the heuristic learning process that lasted over four years, there has been a tremendous amount of groundless work. In this research, the main data source were the interviews that were semi- and unstructured. In the beginning of the research, the aim of the research was loose fitting. However, the theoretical framework was developed at a relatively early stage of the research process. The general aim was to collect an adequate data to test and refine the model. In the end, over a hundred interviews provided that easily. Towards the final case study, the research questions focused more on the explained phenomenon.

The network approach emphasises the dynamics and the heterogeneous resources that were identified in all studied workplace networks. None of the studied snapshot case study environments have remained the same. Researchers using a network perspective to understand systems of relationships from (1) the perspective of a particular focal firm and from (2) a network perspective have mainly descriptive interests in understanding the complex organisational relationships (Tikkanen, 1998). Therefore, the transferability of the results of this dissertation may be judged on the basis of how understandable the results are to potential appliers.

The generated framework and the proposals were tested with various stakeholders, with fellow academics and practitioners, by reviewing the results of the phases by reading the written papers and research reports and by analysing the results in focus group workshops and industry seminars. The common opinion was that the generated theoretical network service organisation framework applied to a wide range of situations and fitted the phenomenon, and provided new understanding, generality and control for actions concerning workplace network interaction and cooperation.

Even though each workplace network is unique, the three research phases ascertain that the general findings, such as the generated network service organisation and the importance of formal interaction mechanisms, are transferable to most workplace networks. In general, the formed theory provides theoretical control over the issue "structure and process of workplace network interaction and cooperation".

5.2.6 Dependability

Dependability ensures that the data represent the changing conditions of the studied phenomenon. The hallmark of grounded theory is that it incorporates the different conditions, properties, and dimensions of the phenomenon discovered through the grounded theory methodology. An inquiry auditor ensures that the processes of the method are "audited" (Lincoln and Guba, 1985). In case study contexts, dependability is defined as a reliability of demonstrating that the operations of the study, such as the data collection procedures, can be repeated with the same results.

The data triangulation during the research process provided dependability for the study. In the refining final case study, the data was richer than in the earlier phases. However, the focus group workshops with practitioners and fellow academics increased the dependability of the findings. As the different pilot and case study descriptions implied, the theory incorporated the different conditions, properties, and dimensions of the various network organisations. The usage of the two methods of coding and network analysis provided understandable and objective results for general auditing for the steering group members and fellow academics during the research process. Additionally, the theory triangulation, usage of two parallel theoretical perspectives, provided new yet dependable research findings for both the workplace and the network management researchers who took part in the research process.

5.2.7 Confirmability

According to Cuba and Lincoln (1985) *confirmability* examines the "objectivity" of the research; in other words, another researcher is able to confirm the study when presented

with the same data. An audit trail provides the necessary materials to confirm the research. The audit trail for many grounded theories includes the raw data (audiotapes, verbatim transcripts, and researcher notes from the interviews and focus groups), as well as coding and memos from each round of interviews. The researcher's subjectivity to and close involvement in the studied phenomenon increases the confirmability. The three separate research phases of generation, testing and refinement also developed general confirmability. In the pilot study phase, the network actors increased the confirmability with their comments in the focus group workshops. The author's close involvement in the research subject in the final case study, as a development manager responsible for the development of partnership and network management, provided a particular and unique position to confirm the results of the fellow researchers' individual network analyses.

In this dissertation, the author's role was different in different stages of the research. In the beginning, the researcher's role was limited to interviews and observations in the interview situations. In the final case study, on the other hand, the author was responsible for the network and partnership development in the focal firm which constituted a dual role as a researcher and as a network actor. The analysis of the collected data has been rigorous because of the systematic coding and network analysis approaches.

5.3 Future Research

5.3.1 Theoretical Insights

The network approach emphasises the dynamics and the heterogeneous resources that were identified in all studied workplace networks. None of the studied snapshot case study environments have remained the same. Therefore, there are limitations in the general transferability of the results of this dissertation. The research was conducted in a Finnish workplace environment and thus it reflects the market particularities. It would be interesting to see whether further research on improving interaction and cooperation produces similar results in other markets. Therefore, further research is encouraged to replicate the present study in other research settings.

Since the research of networks within workplace service contexts is at an exploratory stage, there are numerous areas for further research. It would be absurd to think that one formed hypothesis of formal interaction building could solve all the challenges in the defined workplace network business environment. Even though the results of this dissertation are limited, the research process and cooperation with fellow academics have generated at least a few clear further research areas.

Firstly, from the perspective of network service organisation and formal team building, structuralist network analysis can be a feasible method for further identifying the network holes, problems and roles in the creation of workplace network cooperation. When the different key role players have been identified within individual networks, they can be assembled into teams, task forces or other groups for interaction in a cost-efficient and practical manner. In order to convince the network members of the importance of interaction and cooperation, both structuralist and connectionist network analysis methods are needed.

Secondly, interaction and cooperation is expensive. In the end all business relationships are dependent on money and transaction-costs. The analysis of workplace networks should involve simultaneous analysis of the attitudes and actions of all parties and emphasise essential issues concerning purchasing and marketing. The interaction approach takes relationships, rather than individual transactions, as its unit of analysis. The development efforts within the relationship strategies depend on analysing the company, its individual relationships, and its overall relationship portfolio and network position (Turnbull et al., 1996; Zolkievski and Turnbull, 2002; Wilkinson and Young, 2002). The case studies within the industry are focusing on to grasping these issues of relationship management and transaction-costs as a part of inter-organisational network phenomena (*c.f.* Brackertz and Kenley, 2002a, 2002b; Bröchner, 2003; Tuomela, 2003; Kadefors and Bröchner, 2004; Salonen 2004a).

Thirdly, the analysis of individual networks in asymmetric environments may be considered to be superficial. Connections and different network roles should be studied on a portfolio basis in order to understand and improve interaction between functions in the network context. The research of the network phenomenon in the CRE and FM environments is still at an exploratory stage where massive research efforts, both functionalist and interpretive, are hardly justifiable. The research funding for social issues in the service environment with its technical and administrative history is scarce. However, the current research efforts in workplace research with end-users and spatial planning (c.f. Becker and Steele, 1994; Haynes and Price, 2002, 2004) helps to put forward the epistemological integration of general workplace management and social network management.

5.3.2 Practical Insights

The author has a personal mission of improving interaction and cooperation in all workplace networks. As current practitioner, it is possible to advance these issues in numerous cases, *e.g.* in contract negotiations, in the development of common

management practices and by emphasising the issues in formal lectures and less informal business meetings. The operational interaction and cooperation improvements are something that may be pushed in several practical situations. However, one topic discussed in this study has remarkable development needs in general: the strategic interaction building (see also Barrett, 2000; Alexander 2004).

As stated in the final case study, in a complex and cross-disciplinary facilities management network, joint strategy creation is challenging. For example Senate Properties still aims to gather the strategic "client intelligence" with its managed workplace networks and to orchestrate the operational client intelligence with its external service provider network by creating joint objectives for cross-disciplinary service management. To conceptualise the joint objectives based on client centrality, in other words, the needs of the building user organisation, Senate Properties works on developing the building of a 'Workplace Network Strategy'. The aim is that the significant triadic network actors participate collectively in creating joint objectives by bringing their specialised knowledge to the network organisation. The workplace network strategy building aims to increase the actors' self-governance and flexibility, primarily towards the building user organisation and secondarily towards all network organisation actors.

In spite of the formal interaction on both strategic and operational levels of the building user and owner organisations, the service providers are at the same time embedded weakly to the strategic level of the network. The support service partnership network around Uusimaa Regional Tax Office is based on the CRE expertise of Senate Properties and the service expertise of various service providers (Figure 14). The facilities strategy should be established in the future for incorporating the areas of user and owner interests into one strategic facility brief. In addition to the strategy alignments between the owner and user organisations, the service provider specific strategies and areas of expertise are directed to separate Facilities Service Strategy. The Facilities Strategy and the Facilities Service Strategy establish a proactive model for combining both strategic real estate and operational service planning (see Then, 1999; 2003) for all co-operators in the partnership network.

Partnership networks should ensure learning and continuous improvement on and between all network organisation levels. Knowledge should flow from strategic clients to service units and vice versa. The formed model for partnership network strategy creation (Figure 13) follows the principles of continuous improvement and learning based on joint strategy alignment, operational planning, service delivery, and monitoring.

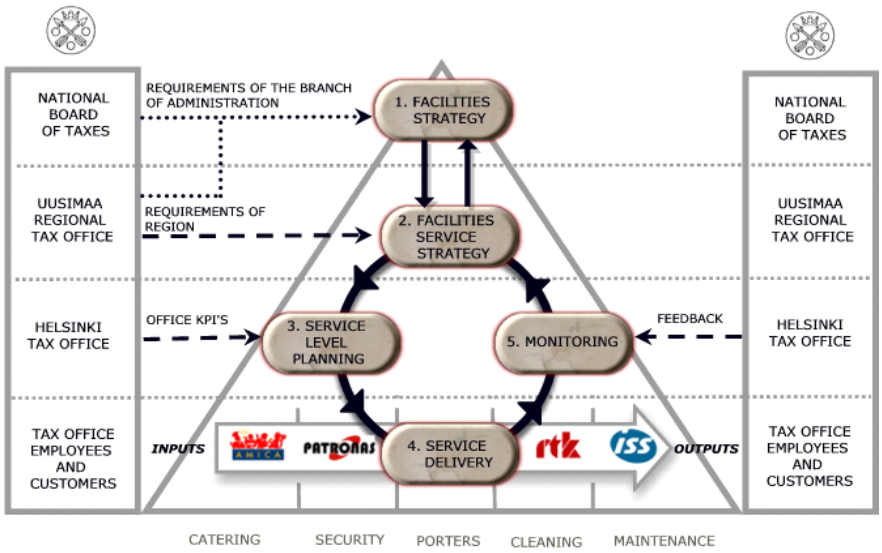

Figure 13 Practical application of the governance model of workplace interaction

The formal interaction creating strong ties between the network members are formed in a similar manner as the teams introduced by Lambert et al (1995; 1999) in the corporate real estate environment. These teams include different types of task forces, executive teams, internal and external professional service teams and service delivery teams suitable for each level. The teams establish the foundation for the four-stage governance model for the extensive communication of the network organisation.

1. Facilities Strategy: aligned by the senior management task forces consisting of tax customer representatives and Senate Properties representatives to address major service and workplace decisions. The executive team defines a collective strategy on the basis of association strategies of the network organisations. A shared policy deployment defines organisation-wide goals for the services and oversees the creation of workplace knowledge in the network organisation. A linkage is made to the network integrators by planning and programming the aligned strategy.

2. Facilities Service Strategy: aligned by the executive team consisting of the contract manager representatives of the customer and Senate Properties and strategic service providers to address major service and workplace decisions. The formed executive team defines a collective strategy on the basis of association strategies of the network organisations. A shared policy deployment defines organisation-wide goals for the services and oversees the creation of workplace knowledge in the network organisation. A linkage is made to the network integrators by planning and programming the aligned strategy.

3. Operational planning: some service providers may have exceptional boundary spanner roles and cross-disciplinary information for joint operational planning. These representatives of the service providers should be invited to become a part of the professional service planning teams in the case service steering group. The professional service teams plan and oversee decentralised client and network engagements. The assembled network integrators ensure the operational implementation of workplace services, transfigure the aligned strategy to plans and operative goals, and design operational service delivery systems. Professional service teams identify the requirements within the business units. Operational plans are implemented by setting business objectives for service units. The service levels, performance indicators and goals defined based on the input and output ensure the empowerment and leveraged performance inside and between the service units on the operational level.

4. Service delivery: performed by the front line service staff of each service unit. Monitoring daily service needs and performance gaps in the operative work ensures the continuous improvement of service processes. The operational workplace knowledge may offer considerable support for the upper level decision-making.

5. Monitoring: performed by local and regional professional service teams, monitoring ensures the integration of knowledge between operational work and strategic management. By monitoring and analysing customer feedback, the network integrators are able to adapt the operational data and information for executive level workplace knowledge.

The practical application proves that the created theoretical framework not only has possibilities for further development but also proves again its transferability to numerous business environments. The work continues.

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APPENDICES

Appendix 1 Open coding - Dimensional properties and proposals

Dimension	Properties (some problems experienced by the interviewees)	Dimensional properties (development areas)
1. INTERNAL CLIENT-SUPPLIER RELATIONS *(VERTICAL INTERACTION)*	• …Clients and service providers have different views on the service quality and the core business support issues (CRE, FM, PM) • …Bidding and contract management with clients in the same organisations are not systematic (SP) • …Services lack strategic significance (SP) • …Workplace issues (especially service) are not seen as strategically important (SP, FM) • …Good informal relationships between clients and service providers do not necessary mean that the services are good. Cooperation should more systematic (CRE) • …Unprofessional clients (mostly HR and finance people) cannot describe the needs of the core business which results in low bidding and bad service that cannot be repaired over the time of contract period (SP) • …FM business environment has changed rapidly. Finnish clients and suppliers have a long tradition of verbal (informal) agreements. Cooperation during contract period should be more formal (FM) • …A facility manager is often forced to act as "a kindergarten teacher" for the quarrelling service providers (CRE/HR)	➢ **Responsibility for purchasing support services and contract management is fragmented.** ➢ **Workplace issues and service are not seen as a single entity with strategic significance.** ***Dimensional proposal*** • ***Formal cooperation and joint strategic planning for purchasing should be established between the contract managers.***
2. CUSTOMER RELATIONSHIP MANAGEMENT	• …Different levels of customer organisation are not aware of the contents of the agreed services and contracts. Strategic management is not interested in the contents, and the end-users expect too much from the agreed services. (FM) • …The client side has varied views on the needs of the customer organisation (SP) • …The service providers have varied knowledge of the business support needs of the user organisation (FM, SP) • …Customer service is highly dependent on the individual people in the FM and service provider firms. Customer service is not organised. (CRE) • …Various end-user surveys of service providers require too much time from the end-user organisation. End-user organisation is not able to separate who is providing and who is asking what (many perceive workplace services as one entity) (CRE) • …End-user organisations neglect the service quality surveys because of they have a large number of them. The amount of time required to complete the surveys hinders the customer organisation. (FM)	➢ **Communication towards the user organisation is irregular and disorganised** ➢ **Customer relations management depends mostly on the personal contacts at the different levels of the workplace network** ***Dimensional proposal*** • ***Joint customer relationship management should be organised at all levels of the user organisation.***

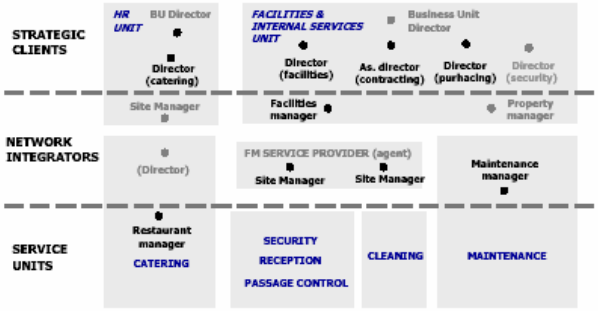
3. SERVICE-TO-SERVICE RELATIONS *(HORIZONTAL INTERACTION)*	• …Service providers do not cooperate with each other. Better networking between service providers could improve the overall management of the workplace services (CRE, FM) • …The clients' service provision roles are fragmented (SP) • …Clients should have only one department for purchasing services (now the roles are divided between HR and FM, which creates operational silos between the service providers) (SP) • …Roles between the service providers are not specified (SP) • …Facility and property managers should cooperate more with the soft service providers managed by he human resources department (CRE/HR) • …Service providers have separate technical systems but there are common information interests (FM, SP) • …Facility and property managers should cooperate more with the soft service providers when they purchase new hard services (SP) • …Service providers compete with each other, which causes gaps in the service delivery from the perspective of the end-user of the services (FM, SP) • …There are gaps in the service delivery between the service providers (FM, PM) • …There is lack of teamwork among the service providers (CRE) • …Service providers do not create synergies in service provision and development (SP, FM, CRE) • …External service providers consider themselves less important than the staff of the internal service units even though their job is equally important to the core business support (SP) • …Fragmented roles cause lack of motivation among the service staff (SP) • …Although the different service providers cannot be replaced with each other, they could share information in their daily tasks which would help to improve all of their work (FM)	➢ **Service providers do not have formal communication with each other** ➢ **Clients and Service providers are not networked with each other at the different levels or the workplace organisation** ***Dimensional proposal*** • ***Service development and delivery should be performed in cooperation. More interaction should be established***
4. QUALITY MANAGEMENT	• …Contract management is not systematic (CRE) • …Tools for service quality management are inadequate and highly dependent on the individual service providers (CRE, FM) • …Service quality issues (SLA's and KPI's) are not systematically managed by clients and service providers (FM, PM, SP) • …Service providers use separate end-user surveys and do not share the information with each other (CRE) • …End-users give direct feedback about the service quality and gaps which is not systematically collected and shared by the service providers (CRE) • …The perceived quality of all services is as bad as the weakest service provider delivering its individual service (FM) • …End-users are not aware of the contracted service levels agreed by FM and service providers (CRE) • …Issues regarding service quality are subjective and not systematically managed (CRE/HR) • …Service contract periods are too short in terms of building a relationship. This leads to lack of trust, service development and continuous improvement (SP) • …Continuous improvement and cooperational efforts are	➢ **Service quality issues are not managed in cooperation (at the different business relationship levels)** ***Dimensional proposal*** • ***Performance gaps in the operative work should be identified and continuously fixed.***

minimal because of the low revenues (SP)

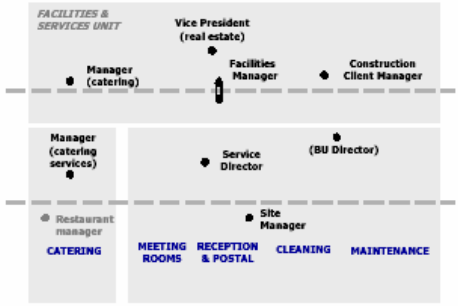
- …Service quality measures of hard and soft services are very different although the customer is the same and does not always recognize the line between the hard and the soft (FM, SP)
- …Negative results yielded by end-user surveys are improperly used. Neither benchmarking nor constructive conversations are used to improve the future results (SP).
- …Formal meetings about the service quality have improved the service quality. However, the practise should be more systematic and common to all services (FM, PM).
- …Systematic quality control and continuous improvement are missing from the Finnish service culture. Traditionally, the service staff has been accountable for its work and verbal agreements. Service level agreements have not been necessary in the “good old days”. However, the times have changed (FM)

(CRE)= corporate real estate manager,
(HR)= human resources manager,
(FM)= facility manager,
(PM)= property manager,
(SP)= service provider’s manager

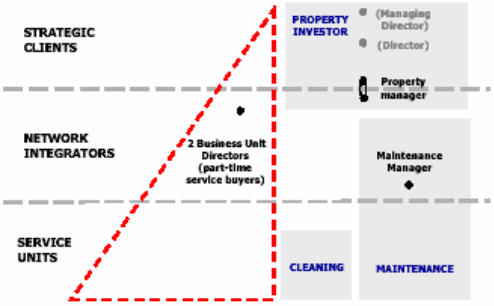
Appendix 2. People interviewed in pilot study network service organisations



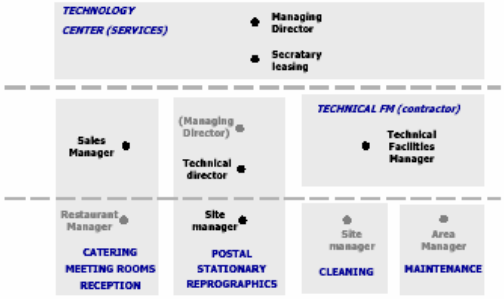
Case 1. Corporate Headquarters (financial group)



Case 2. Large Business Unit (telecom. firm)



Case 3. Medium Business Unit (real estate investor)



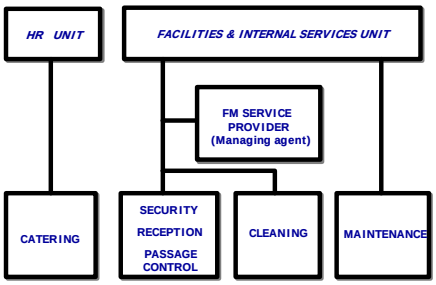
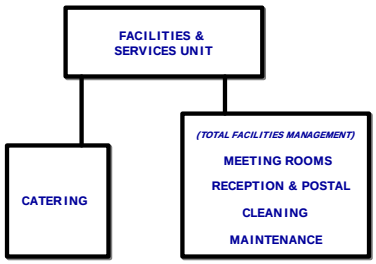
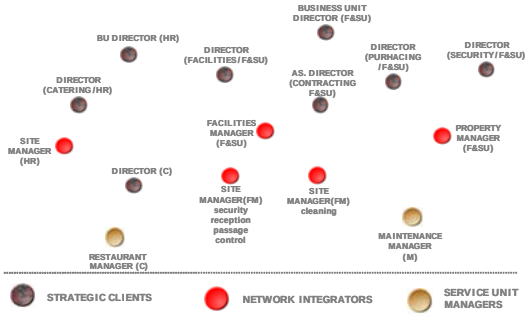
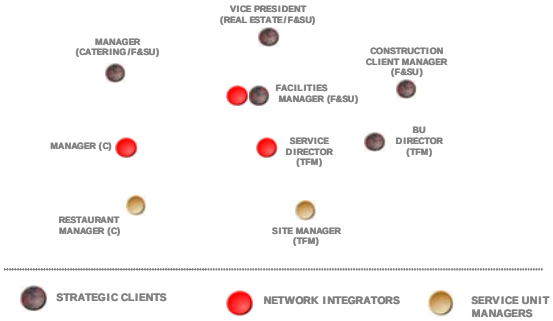
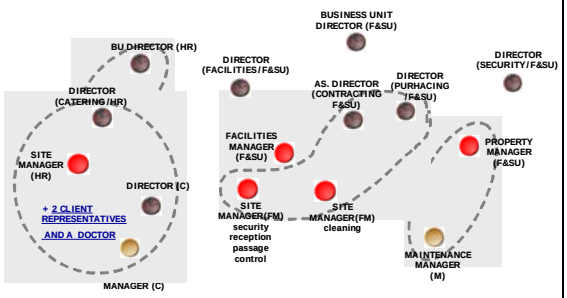
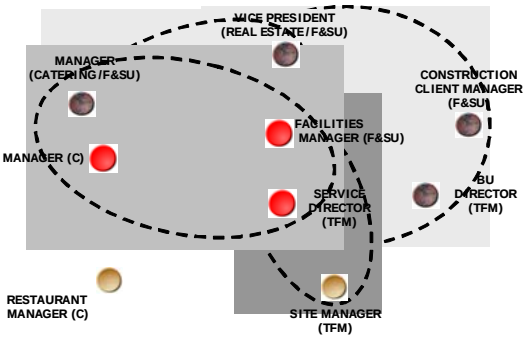
Case 4. Small Business Unit (technology park)

People in black = chosen in snowball sampling process

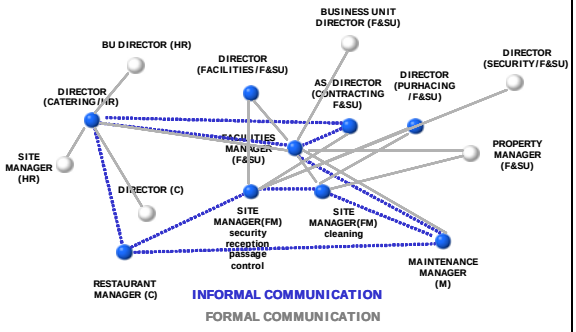
People in grey = left out in snowball sampling process

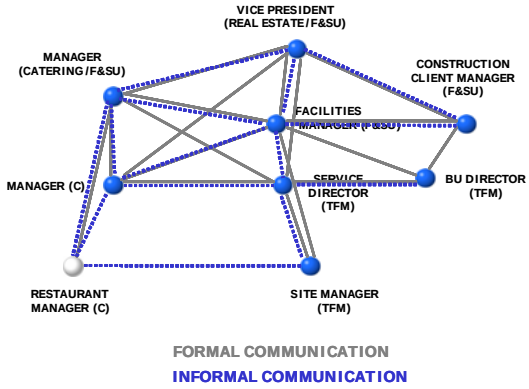
Grey boxes represent organisational unit boundaries sketched with strategic client representatives

Appendix 3: Connection analysis of the pilot study networks (modified from a presentation at World Workplace Japan 2003)

Corporate Headquarters (financial group)	Large Business Unit (telecom firm)
Contractual Network – Organisational	
	
Network Service Organisation - Social Network	
	
Contractual linkages (task-forces and regular meetings)	
	

Formal and informal connections





Appendix 4. Selective coding - Dimensional properties based on core category of joint strategy alignment (Final case study)

Internal Client-Supplier Relations *Vertical cooperation*	**Customer relationship management**	**Service-to-service relations** ***Horizontal cooperation***	**Quality management**
Dimensional proposals: **Joint strategy for purchasing the services should be established at the strategic level of the triadic network**	**Joint customer relationship management should be established at the strategic level of the triadic network**	**Formal cooperation should be established at the strategic and the operational levels of the triadic network**	**Strategic guidelines for quality management should be established in the triadic network (based on the strategic aims)**
Dimensional properties: Strategic and operational workplace issues and goals face a gap in the network, because various clients and service providers interact separately. The strategic level of companies sees an added value in the operational cooperation, even though the existing operational service gaps might be solved by enhancing interaction. Cooperation issues are rarely agreed upon. Transactions and costs are hard to share between the network members. There is a lack of network business logics in the multiple contracts that in the long run serve the same purpose – business support. Traditional buyer-service provider histories and interaction mechanisms hinder the new vertical innovations. There is resistance towards a broader view of workplace support interaction. Some clients are too busy to develop new interaction mechanisms. New cross-functional role formations between the services cause resistance because time is valuable for everybody. Clients should consider these issues during the bidding processes.	Customer requirements are not analysed collectively. Cooperation should be established, but it does not happen without initiatives by the management level. The informal, unstructured communication is inadequate. The details of contracts and service levels are overseen by individual people. Users do not know what has been agreed upon. The majority of users interact informally with all service providers. However, service providers do not interact with each other. Service offering and concepts for cross-functional workplace services are undeveloped. There should be more cooperation between the building owner and the service providers in order to build a better network offering. The end-users' needs are not analysed collectively and objectively. The individually operating managers (network members) should develop (formal) cooperation.	The organisations whose operational management attends formal meetings are more aware of the workplace issues than those with operational management not attending. Information is not shared. It is being withheld by individual service providers. Service providers do not share information willingly. The information should be shared collectively (through the establishment of formal interaction mechanisms). Roles of cooperation issues are not being agreed upon, even though possibilities for cooperation exist. Most service providers are more willing to take on more services rather than to waste energy on cooperation issues. The changing strategic involvement, interaction and the roles are relatively new for all parties. The value of cooperation is constantly discussed, yet the operational cooperation is missing. (Formal cooperation should be established). Competition between service providers presents a barrier to horizontal innovative communication. Cooperation should be enforced by the strategic level of management. Resources for cooperation should be added to the existing network.	Service level agreements do not have shared (formal) strategic guidelines in the network. Joint information systems are missing or not fully used for cooperation purposes. However, everybody see that they are needed. End-user surveys are not being centralised and collectively analysed. Service delivery is based on long personal histories, and service quality has therefore become subjective. (Formal mechanisms should be established). Verbal (informal) agreements are very common in long-term relationships. However, such tacit knowledge disappears easily. (Formal agreements should be established). Causes for dissatisfaction have not been analysed collectively in the network because of the separate relationships. There are operational gaps in the service delivery, and service providers do not document them. Such gaps should be documented centrally.

Appendix 5. Interview themes and interviewed people

1. Procurement of FM- and PM-services (Heinimäki and Puhto, 2001)

Theme 1) Description of the organisation that manages and provides maintenance services
Theme 2) Current status of maintenance contracts
Theme 3) Customer and Owner relationship management
Theme 4) Service offering of management services
Theme 5) Future of the industry

Interviewed people:

2. Vice President Real Estate. Elisa Communications Oyj. Helsinki, Finland, 17.10.2000.
3. Managing Director. Lentoasemakiinteistöt Oyj. Vantaa, Finland, 15.11.2000.
4. Managing Director. Kauppakeskus Itäkeskus Oy. Helsinki, Finland, 2.11.2000.
5. Property Manager. ICL Invia Oyj. Helsinki, Finland, 16.11.2000.
6. Director. State Property Agency, Office Premises. Helsinki, Finland. 26.10.2000.
7. Inspector. Uusimaa Regional Tax Office. Helsinki, Finland. 2.11.2000.
8. Property Manager. Apteekkien Eläkekassa. Helsinki, Finland. 16.11.2000.
9. Property Manager. Oy Sinebrychoff Ab, Kiinteistö. Kerava, Finland. 27.10.2000.
10. Property Manager. City of Helsinki, Real Estate Unit. Helsinki, Finland. 31.10.2000.
11. Director of Real Estate. Keskinäinen Eläkevakuutusyhtiö Ilmarinen. Helsinki, Finland. 17.10.2000.
12. Director, Real Estate. Osuuspankkien keskuspankki Oyj. Helsinki, Finland. 7.11.2000.
13. Property Manager. Vantaan kaupunki, Tilakeskus. Vantaa, Finland. 18.10.2000.
14. Director, Real Estate. Helsingin seurakuntayhtymä. Helsinki, Finland. 12.10.2000.
15. Project Manager. Kuntien eläkevakuutus. Helsinki, Finland. 4.10.2000.
16. Managing Director. Kestra Kiinteistöpalvelut Oy. Helsinki, Finland. 20.10.2000.
17. Bureau Chief. Espoon kaupunki, Kiinteistöpalvelukeskus. Espoo, Finland. 13.10.2000.
18. Director, Real Estate. HOK, Kiinteistö- ja liikepaikkayksikkö. Helsinki, Finland. 19.10.2000.
19. Maintenance Manager. Keskinäinen eläkevakuutusyhtiö Varma-Sampo, Kiinteistöosasto. Helsinki, Finland. 31.10.2000.
20. Construction Manager. Keskinäinen eläkevakuutusyhtiö Varma-Sampo, Kiinteistöosasto. Helsinki, Finland. 31.10.2000.
21. Bureau Chief. Hewlett-Packard Oy, Support Services. Espoo, Finland. 23.10.2000.
22. Bureau Chief. Helsingin kaupunki, Kiinteistövirasto, Talo-osasto. Helsinki, Finland. 10.10.2000.
23. Director. Helsingin kaupunki, Sosiaali- ja terveydenhuollon kiinteistöpalve-lukeskus. Helsinki, Finland. 16.10.2000.
24. Director, Real Estate. Sonera Oyj. Helsinki, Finland. 3.10.2000.
25. Facilities Manager. Helsingin ja Uudenmaan sairaanhoitopiiri, Yhty-mähallinto. Helsinki, Finland. 23.10.2000.
26. Director of Administation. Espoon-Vantaan ammattikorkeakoulu Oy. Vantaa, Finland. 3.10.2000.
27. Assistant Director. Merita Pankki Oyj. Helsinki, Finland. 10.10.2000.
28. Customer Manager. Kapiteeli Oy, Sijoituskiinteistöt. Helsinki, Finland. 18.10.2000.
29. Security Manager. F-Secure Oyj. Espoo, Finland. 11.10.2000.
30. Director, Real Estate. Dividum Oy. Helsinki, Finland. 9.10.2000.
31. Property Manager. Oy International Business Machines Ab, Kiinteistö ja toimistopalvelut. Helsinki, Finland. 13.10.2000.
32. Managing Director. Innopoli Oy. Espoo, Finland. 11.10.2000.
33. Director. Pohjola-Yhtymä Vakuutus Oyj, Kiinteistönpito-osasto. Helsinki, Finland. 10.10.2000.

34. Real Estate Investment Manager. LEL Työeläkekassa. Helsinki, Finland. 17.10.2000.
35. Property Manager. Yleisradion eläkesäätiö. Helsinki, Finland. 28.11.2000.
36. Property Manager. Pohjola-Yhtymä Vakuutus Oyj, Kiinteistönpito-osasto. Helsinki, Finland. 10.10.2000.
37. Director, Helsinki University, Teachnical Department. Helsinki, Finland. 24.10.2000.
38. Property Manager. Helsinki University of Technology, Administration. Espoo, Finland. 12.10.2000.
39. Managing Director. Oy City Forum Ab. Helsinki, Finland. 27.10.2000.
40. Director, Real Estate. Keskinäinen eläkevakuutusyhtiö Varma-Sampo, Kiinteistöosasto. Helsinki, Finland. 31.10.2000.
41. Facilities Manager, TietoEnator Oyj. Espoo, Finland. 11.10.2000.
42. Director. Kiinteistösijoitus Oyj Citycon. Helsinki, Finland. 19.10.2000.
43. Director, Real Estate. ABB Current Oy. Helsinki, Finland. 6.10.2000.

2. Service Provision Trends of Facilities Management in Northern Europe (Tuomela and Puhto, 2001)

Theme 1) How are the different services organised in your business environment (network)? What are the development areas?
Theme 2) What are the benefits of different management models?
Theme 3) How are the different services managed during the contract periods? What are the development areas?

Interviewed people:

1. Partner (Investment), DTZ Sweden, 15.8.2000 in Stockholm, Sweden.
2. Operation Engineer, OBOS Forretningsbygg, 21.6.2000 in Oslo, Norway.
3. Property Manager, Stena Fastigheter Ab, 15.8.2000 in Stockholm, Sweden.
4. Managing Director, OBOS Forretningsbygg, 21.6.2000 in Oslo, Norway.
5. Adviser (Chief of RE Adm. Office), Norwegian Defence Contruction Service, 21.6.2000 in Oslo, Norway.
6. Adm. Director, Catella Eiendoms-Consult, 19.6.2000 in Oslo, Norway.
7. Property Manager, Ljungberg Gruppen Ab, 15.8.2000 in Stockholm, Sweden.
8. Managing Director, Danica Ejendomme, 23.8.2000 in Copenhagen, Denmark.
9. Director (Property Management), DTZ Debenham Tie Leung, 18.7.2000 in London, England.
10. Technical Director, Capona Ab, (telephone interview) 8.8.2000.
11. President, The Danish Association of Facility Managers, 22.8.2000 in Copenhagen, Denmark.
12. Property Manager, Tallberg Facility Management Ltd, 6.6.2000 in Helsinki, Finland.
13. Managing Director, Tallberg Facility Management Ltd, 27.11.2000 in Espoo, Finland.
14. Development Manager, JOT Automation Group, 6.7.2000, in Espoo, Finland.
15. President, State Property Agency, 14.6.2000 in Helsinki, Finland.
16. Manager, The Danish Association of Real Estate Management, 21.8.2000 in Copenhagen, Denmark.
17. Director, WSP Consulting Group (FM), 18.7.2000 in London, England.
18. Property Manager, Varma-Sampo Oy, 12.6.2000 in Helsinki, Finland.
19. Real Estate Broker/ Valuer, DTZ Egeskov & Lindquist, 22.8.2000 in Copenhagen, Denmark.
20. Director, NSB Real Estates, 22.6.2000 in Oslo, Norway.

21. Manager (FM), Barclays Capital, 19.7.2000 in London, England.
22. Director, Foreningen Norsk Eiendom, 21.6.2000 in Oslo, Norway.
23. Chief Engineer, Civil Aviation Administration, 19.6.2000 in Oslo, Norway.
24. Asset Manager, Magistrenes Pensionskasse, 21.8.2000 in Copenhagen, Denmark.
25. Property Manager, Celexa Fastigheter Ab, 14.8.2000 in Stockholm, Sweden.
26. Property Manager, VVO Asunnot Oy, 16.6.2000 in Helsinki, Finland.
27. Managing Director, Matinkylän huolto Oy, 15.6.2000 in Espoo, Finland.
28. Property Manager, Kiinteistö Fennia Oy, 6.6.2000 in Helsinki, Finland.
29. Business Unit Manager, TAC Finland, 6.6.2000 in Vantaa, Finland
30. Operation Engineer, Statoil, 20.6.2000 in Stavanger, Norway.
31. Director, Catella Boardroom Consulting, 15.8.2000 in Stockholm, Sweden.
32. Operation Engineer, Vasakronan Infra City Ab, 16.8.2000 in Upplands Vässby, Sweden.
33. Technical Director, Vasakronan Ab, 16.8.2000 in Stockholm, Sweden.
34. Operation Engineer, Dale Eiendoms Utveckling, 20.6.2000 in Dale, Norway.
35. Operation Engineer, Statoil, 20.6.2000 in Stavanger, Norway.
36. Quality & Environment Manager, Vasakronan Ab, 16.8.2000 in Stockholm, Sweden.
37. District Director, Engel Real Estate Services Ltd, 16.6.2000 in Helsinki, Finland.
38. Managing Director, WSP Consulting Group (FM), 18.7.2000 in London, England.
39. Senior Facility Manager, Drivers Jonas Ltd, 19.7.2000 in London, England.
40. Manager, GVA Grimley, 17.7.2000 in London, England.
41. Property Manager, Asticus (UK), 17.7.2000 in London, England.
42. District Director, ISS Building Technologies Ltd, 7.6.2000 in Helsinki, Finland.

3. Organisation and Procurement of Facility Services (Tuomela, 2002; Hanhijärvi, Tuomela and Puhto, 2003)

Theme 1) How are the different services organised in your business environment (network)? What are the development areas?
Theme 2) How are the different services purchased? What are the development areas?
Theme 3) How are the different services managed during the contract periods? What are the development areas?

Interviewed people:

1. Property Manager. Sponda. Vantaa, Finland. Interviewed in 10.1.2001.
2. Real Estate Development Manager. NCC Finland. Interviewed in 13.1.2001.
3. Director, Amica, Helsinki, Finland. Interviewed in 16.1.2001.
4. Service Director. Engel Services, Helsinki, Finland. Interviewed in 20.1.2001.
5. Director. Libella Services. Helsinki, Finland. Interviewed in 21.1.2001.
6. Bureau Chief. Tapiola-yhtiöt. Espoo, Finland. Interviewed in 18.5.2001.
7. Service Manager. Engel Palvelut Oy. Helsinki, Finland. Interviewed in 18.5.2001.
8. Managing Director. Technopolis Plc. Oulu, Finland. Interviewed in 11.6.2001.
9. Regional Director. Antilooppi Oy. Helsinki, Finland. Interviewed in 18.5.2001.
10. Director, Real Estate. Technopolis Plc. Oulu. Finland, Interviewed in 11.6.2001.
11. Business Unit Manager. Osuuspankkikeskus. Helsinki, Finland. Interviewed in 30.4.2001.
12. Service Coordinator. Accenture. Helsinki, Finland. Interviewed in 16.5.2001.
13. Sales Manager. Engel-Yhtymä Oy. Helsinki, Finland. Interviewed in 17.5.2001.

14. Director. Senaatti-kiinteistöt. Helsinki, Finland. Interviewed in 3.7.2001.
15. Key Account Manager. Hartela. Helsinki, Finland. Interviewed in 15.11. 2001.
16. Managing Director. Spektri BusinessPark Oy. Espoo, Finland. Interviewed in 28.5.2001.
17. Property Manager. Nokia. Espoo, Finland. Interviewed in 7.6.2001.
18. Manager, Nokia. Helsinki, Finland. Interviewed in 19.6.2001.
19. Property Manager. FPM Liikeisännöinti Oy. Espoo, Finland. Interviewed in 1.6.2001.
20. Managing Director. FPM Liikeisännöinti Oy. Espoo, Finland. Interviewed in 1.6.2001.
21. Property Manager. Jaakko Pöyry Group Oyj. Vantaa, Finland. Interviewed in 3.5.2001.
22. Property Manager. Oy L M Ericsson Ab. Jorvas, Finland. Interviewed in 29.5.2001.
23. Managing Director. Innopoli Oy. Espoo, Finland. Interviewed in 26.6.2001.
24. Project Manager. Hartela. Helsinki, Finland. Interviewed in 15.11.2001.
25. Admistrative Manager. Arthur Andersen. Helsinki, Finland. Interviewed in 8.6.2001.

4. Network Service Organisation – a Multiple Pilot Study (Tuomela and Salonen, 2003)

Theme 1) How are your services organised?
Theme 2) How do you communicate about different services with the client (e.g. building owner)? What are the issues and how frequently?
Theme 3) How do you communicate about different serviceswith the end-user organisation (e.g. management and staff)? What are the issues and how frequently?
Theme 4) How do you communicate about different services with the other service providers (e.g. cleaning, maintenance, catering etc.)? What are the issues and how frequently?
Theme 5) How would you improve the overall cooperation in the network?

Interviewed people:

1. Managing Director. Elisa Internet Ltd. Helsinki, Finland. Interviewed in 10.06.2002.
2. Manager, Nordea. Helsinki, Finland. Interviewed in 28.06.2002.
3. Management Asssistant, Innopoli. Espoo, Finland. Interviewed in 23.04.2002.
4. Regional Manager, Amica. Espoo, Finland. Interviewed in 06.05.2002.
5. Regional Manager, ISS. Helsinki, Finland. Interviewed in 24.06.2002.
6. Regional Manager. Amica. Helsinki, Finland. Interviewed in 24.04.2002.
7. Manager, Menox. Helsinki, Finland. Interviewed in 30.04.2002.
8. Managing Director. Menox. Helsinki, Finland. Interviewed in 24.04.2002.
9. Manager, Seurahuone. Helsinki, Finland. Interviewed in 25.06.2002.
10. Regional Manager, Meratek. Helsinki, Finland. Interviewed in 25.06.2002.
11. Facilities Manager, Elisa Communications. Helsinki, Finland. Interviewed in 20.05.2002.
12. Vice President Real Estate, Elisa Communications. Helsinki, Finland in 20.05.2002.
13. Manager, Elisa. Helsinki, Finland. Interviewed in 11.06.2002.
14. Service Director. ISS. Helsinki, Finland. Interviewed in 21.05.2002.
15. Manager. Innopoli. Espoo, Finland. Interviewed in 23.04.2002.
16. Managing Director. Haitekki. Espoo, Finland. Interviewed in 13.05.2002.
17. Manager. Elisa. Helsinki, Finland. Interviewed in 18.06.2002.
18. Regional Manager. ARE. Helsinki, Finland. Interviewed in 24.04.2002.
19. Managing Director. Innopoli. Espoo, Finland. Interviewed in 11.04.2002.
20. Facilities Manager. Nordea. Helsinki, Finland. Interviewed in 31.05.2002.

21. Assistant Director. Nordea. Helsinki, Finland. Interviewed in 31.05.2002.
22. Sales Manager. Sodexho. Helsinki, Finland. Interviewed in 30.07.2002.
23. Manager. Innopoli. Espoo, Finland. Interviewed in 29.04.2002.
24. Property Manager. Sponda. Helsinki, Finland. Interviewed in 11.06.2002 and 27.08.2002.
25. Manager. Nordea. Helsinki, Finland. Interviewed in 20.06.2002.

5. Network analysis 1 (Tuomela, A., Heimburger, M., Nummi, J. and Toivonen, J, 2005).

Theme 1) Interviewees's role in creating and maintaining cooperation between the building user and owner organisations?
Theme 2) How strategic cooperation should be established in the workplace network?

Interviewed people:

1. Customer Manager, Senate Properties. January 27th 2004 in Helsinki, Finland.
2. Property Manager, Senate Properties, February 2nd 2004 in Helsinki, Finland.
3. Human Resources Manager, Senate Properties, February 6th 2004 in Helsinki, Finland.
4. Senior Adviser, Senate Properties, March 3rd 2004 in Helsinki, Finland.
5. Director, Senate Properties, March 12th 2004 in Helsinki, Finland.
6. Director, Senate Properties, March 16th 2004 in Helsinki, Finland.
7. Service Manager, Uusimaa Regional Tax Office, April 30th 2004, in Helsinki, Finland.
8. Inspector, Uusimaa Regional Tax Office, May 6th 2004, in Helsinki, Finland.
9. Regional Director, Uusimaa Regional Tax office, May 14th 2004, in Helsinki, Finland.

6. Network Analysis 2 (Tuomela and Toivonen, 2004)

Theme1) What are the distinctive interaction features of actors in the workplace network
Theme2) How is interaction of joint value creation established relating to a workplace network strategy building
Theme 3) What are the fundamental steps involved in workplace network strategy building.

Interviewed people:

1. Service Manager, Uusimaa Regional Tax Office, August 13th 2004, in Helsinki, Finland.
2. Customer Manager, Senate Properties. August 13th 2004 in Helsinki, Finland.
3. Director, Patronas (security company), August 22nd 2003 in Helsinki Finland
4. Security Manager, Patronas (security company), September 9th 2003 in Helsinki Finland
5. Maintenance Manager, ISS (maintenence) August 22nd in Helsinki Finland
6. Service Manager, ISS (maintenence) August 22nd in Helsinki Finland
7. Director, L&T (environmental management) September 29th in Helsinki Finland
8. Regional Manager, Amica (catering) November 23rd in Helsinki Finland.

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