HOW NETWORK CONTEXT INFLUENCES STRATEGIC INFORMATION SYSTEMS PLANNING

Two cases from Helsinki's metropolitan area

Master thesis Industrial Engineering and Management

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Abstract

Public services are increasingly transcending organizational borders. Yet, Strategic Information Systems Planning (SISP) is mostly studied within organizations. Recently, however, preliminary attempts are made to study SISP on a network level. As the network studies up to now focus on the planning process and its outcome, we choose to study contextual factors that give input to the process and effectiveness of inter-organizational (IO) SISP.

This thesis aims to explore - by means of in-depth semi-structured interviews - how different network contexts – both strong and weak network ties - may lead to different SISP approaches and success. By analyzing the transcriptions of audio taped interviews with the qualitative data analysis program NVivo, factors that influence SISP in a network were derived. As there is almost no previous research on contextual factors of SISP in networks, SISP literature has been systematically reviewed to derive SISP factors on the organizational level. This literature review was then combined with seminal work in the field of network literature. From these literatures the following major contextual factors that influence SISP in a network were found: 1) the external environment or weak ties of the network 2) the strong ties of the network, 3) Input dimensions, consisted of the nature of the planned IS and informational and non-informational resources committed to the SISP process.

Two cases were conducted in Helsinki's metropolitan area to empirically explore the factors found in the systematic literature review. The first case regarded the planning of an online identification and payment system that supports the public services of municipalities. The formulation of an inter-organizational IS plan in the capital area served as a second case study. Key stakeholders in the planning process of both networks were interviewed to evaluate the context, process and effectiveness.

Several conclusions were drawn from the cross-case analysis:

- The comprehensiveness of the planning process should fit the complexity and dynamics of the network and its environment in order to keep track of all strong and weak ties.
- Environmental uncertainty can reinforce strong ties within the network and increases the use of hierarchical network mechanism, which increases the degree of planning.
- IO SISP that builds on prior experience and existing relations will increase trust in the planning process, which further stimulates the learning process. The degree to which SISP is a learning process also depends on how the network and its partners deal with the conservation and diffusion of knowledge.
- As networks are less hierarchical, the IT function is mainly decentralized and fairly informal, which decreases the rationality of the planning process.
- Informational resources, such as the input of a strategy or policy, have an influence on the non-informational resources.
- The degree of informational and non-informational resources provided to the research process depends on the perceived importance of SISP and the planned information systems.

This research has important implications for practitioners: first, they should think of the fit of their network and how they approach SISP. On one hand a balance between control and agility and on the other hand a balance of the level of detail is needed for the success of the SISP process. Last, managers should recognize IOSISP as important and provide sufficient human resources to the process.

Keywords: Strategic Information Systems Planning, networks, inter-organizational Information Systems, inter-municipality cooperation, e-government

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Prologue

Dear reader,

In front of you lays the graduation thesis, which finalizes my Master of Science degree in Industrial Engineering and Management at the University of Twente. This thesis is a report of the research conducted between October 2007 and April 2008 in the metropolitan area of Helsinki (Finland). It will both describe the theoretical and empirical side of my research.

This research must be interpreted in the light of iNet. Five European universities from Enschede (Netherlands), Münster (Germany), Rotterdam (Netherlands), Tilburg (Netherlands) and Turku (Finland) noticed Inter-organizational Strategic Information Systems Planning (IO SISP) as a gap in Information Systems research and started in the end of 2006 the iNet platform for initiatives on IO SISP research. This study took place in the context of iNet and is a successor of Jan-Willem Mulder's graduation project, which aimed at researching how the IO SISP process can be assessed, substantiated by a case study of the IZIT program.

This thesis would not be in your hands without the support from my Dutch supervisors, Ton Spil and Michel Ehrenhard, and my Finnish supervisors, Hannu Salmela and Timo Kestilä. Ton and Michel helped me on distance with on one hand conceptual creativity and on the other hand methodological rigor. In Finland, Timo was a great sparring partner and helped me to penetrate Finnish organizational networks, something, which was not always easy! I really enjoyed the trips we made for the interviews and the discussions we had. Hannu supported me with his clever ideas and guidelines on my periodical and final publications. Apart from my supervisors, I would like to thank my girlfriend, family and friends for the moral support during my stay in the far North, especially in the winter time when only four hours of daylight reached my skin.

Roughly, this report has four parts. First, a theoretical part will introduce the reader in the subject of IO SISP, indicates why this research matters and what according to the systematic literature review relevant contextual factors are. Second, the research design and methods used for the case study are delineated. Third, the cases are described and findings are analyzed cross-case and in the light of the theoretical framework. Finally, the research will be wrapped up in a conclusion chapter and reflected on in the epilogue. The resulting (submitted) publications of the 2nd ECIME conference in London and the 16th ICIS conference in Paris are attached to this report as appendices C and D.

I hope you will fully enjoy this report.

Tijs van den Broek, Houten

Introduction

Importance of studying Inter-organizational Strategic Information Systems Planning

"While Finland is an e-government pioneer, it continues to face a number of crucial e-government challenges...". The OECD (2003) published a report on the current state of e-government in Finland and despite Finland's effort it faces some difficulties in implementing its central e-government policy. One of those challenges is the coordination of the collaboration between governmental bodies on e-government projects. Finland is not the only country which faces these challenges (ErnstandYoung, 2007, Van Dijk, 2007).

As our society shifts to a network society (Castells, 2000), worldwide an increasing number of agencies are collaborating on e-government projects for several reasons, such as the economical, political and knowledge position of an organization (Mulder and Spil, 2007). Part of those projects is the planning of a portfolio of Inter-organizational systems that helps to achieve the common goals of the network, which is referred to as Inter-Organizational Strategic Information System Planning (IOSISP) (Spil and Salmela, 2007a). However, research on IOSISP is still limited and most research on SISP so far has discussed the planning of information systems in a single organization and governance issues of Inter-Organizational systems (IOS) and networks. Like single organizations, networks seem to vary in the way they approach IOSISP (Finnegan et al., 2003). This master thesis aims to study the reasons why the process and effectiveness of IOSISP differ among networks.

The next three sections will briefly describe how IOSISP builds on traditional SISP, network and IOS literature and what so far has been published about IOSISP itself. This theoretical background results in a research problem, described in the last section of this introduction chapter.

Theory of Strategic Information Systems Planning

Definition of SISP

The formal strategic planning of information systems within company's boundaries is a well known phenomenon in Information Systems (IS) research and is also known as Strategic Information System Planning (SISP). SISP is defined by Lederer and Sehti (1988) as

"the process of deciding the objectives for organizational computing and identifying potential computer applications which the organization should implement."

A more recent definition is given by Doherty et al.(1999):

"the process of identifying a portfolio of computer-based applications to be implemented, which is both highly aligned with corporate strategy and has the ability to create an advantage over competitors."

Galliers (1987) provided a broader definition of SISP or ISP:

"a management task which is concerned with integration information systems considerations into the corporate planning process and providing a direct link between this and, e.g. information technology acquisition decisions and the applications development process".

Apart from this 'formal' planning definition, the term 'E-strategizing' has been coined to stress the incremental and emergent nature of IS strategy nowadays (Salmela and Spil, 2002).

Goals to conduct SISP

Earl (1993) examined the most common goals why this IS planning processes occurs within companies and concluded that the motivations are:

1. Aligning IS with Business needs
2. Seek competitive advantage from IT
3. Gain Top Management Commitment
4. Forecast IS Resource Requirements
5. Establish Technology Path Requirements.

General Theory of SISP

King (1988) was the first to present an overall model of SISP, visualized in a input-process-output model. This model contains three input variables: information, resources and planning goals, which influence the IS planning system. The outcome of the planning system are planning outputs, which King (1988) refers to as the content of the IS strategic plan and alternative plans that were rejected. Finally, these outputs have an influence on the overall business performance. King uses this model to define evaluation points within the whole SISP process. Mentzas (1997) elaborated on King (1988)'s model and created his own phase and stage model of SISP, which consists of a creating strategic awareness, situation analysis, strategy conception, strategy formulation and strategy implementation planning. A similar input-process-output model is proposed by Lederer and Salmela (1996), to set a framework for the research agenda for SISP. Figure 1 shows the model of this general theory. The planning process is influenced by factors from the internal environment, external environment and the planning resources. The planning process itself resulted in an information plan, described by King (1988). This information plan is implemented to some degree, resulting in the variable plan implementation. The output of the model is the alignment of IS to the business objectives, which is changed to outcomes by Brown (2004) as more output variables were found in succeeding literature. As this model serves as a comprehensive framework for SISP, we will use it to discuss the different parts of SISP: input, process, output, implementation and outcome.

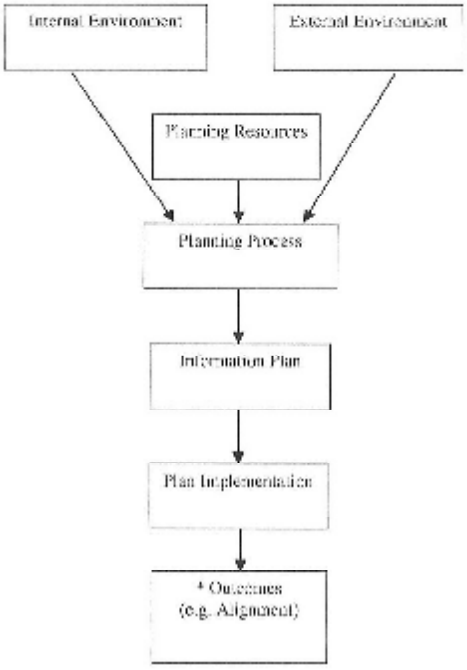

Figure 1. General SISP model of Lederer and Salmela (1996) as modified by Brown (2004)

King (1988) distinguished in his SISP input-process-output model three factors that influence the IS planning process. The informational input consisted of all the business strategic plans, on which the IS strategy should be based on. Thorough business analyses, such as CSF or SWOT analysis, are examples of informational input. Second, King (1988) mentions resources as an input, but does not define it concisely. This factor can contain all different kinds of resources committed to the IS strategy process. This input variable is similar to Lederer and Salmela's planning resources dimension. The third factor is the specific purposes of the IS planning process, which can be expressed in terms of benefits to the organization. Apart from the planning resources, the input dimensions stated by Lederer and Salmela (1996) are more abstract in nature. They summarize the findings of research on the relation between three input variables and the IS planning process. In addition to the planning resources mentioned by King (1988) they state that more resources, like top management commitment, will result in a more effective and efficient planning process. In short, they induce from previous research that "the stability and predictability of industry, government, and economics appear to promote strategic information systems planning". For example, they state that the more turbulent the external environment, the harder it is to formulate an IS strategy. This would advocate E-strategizing in case of environmental turbulence. Brown (2004) concluded that research from 1996 to 2002 did not find a direct relation between the external environment and the IS planning process, as stated by Lederer and Salmela (1996). He noticed that the external environment can have an indirect effect, by affecting the internal environment of an organization. Newkirk and Lederer (2006) placed these external environmental variables not as input for the planning process, but as moderators for the success of a certain planning approach (comprehensive versus incremental). They found that a higher uncertainty in the environment decreases the success of comprehensive planning over incremental planning. Regarding the effect of the internal environment, Lederer and Salmela (1996) induce the proposition that the predictability and simplicity, in other words the uncertainty and complexity have a positive effect on the effectiveness and efficiency of the planning process. An example is the technology maturity (McFarlan et al., 1983). In recent research Segars and Grover (2005) showed that these approaches are not static: as a company evolves during its stadia, so

does the SISP process. As a result organizations are reluctant to adopt a more comprehensive SISP approach as the organizational complexity increases.

Since the late seventies, academic literature start to grasp the IS planning process by conducting qualitative research at firms to describe the processes and indentify SISP approaches (McLean and Soden, 1977, Pyburn, 1983). In general, there has been a dichotomy in the IS process: historically comprehensive process were developed, which were step-to-step methods for IS strategy. On other extreme of the spectrum, SISP can be done incrementally, emerging from changing needs in the environment. This distinction is also denoted as Rationality and Adaptability (Segars and Grover, 1999)and Synoptic vs. Incremental (Sambamurthy et al., 1994). Earl (1993) found in his research that organizations use different approaches to SISP and made an attempt to assess the link between the process approach and effectiveness. These approaches were: Business-led, Method-Driven, Administrative, Technological and Organizational. An hybrid form between both comprehensiveness and adaptability, denoted as the organizational approach, seemed to be most effective. Additionally, Segars and Grover (1999) developed a model of the dimensions of the SISP process, which is based on past SISP literature. They induced 6 process dimensions which together typify the SISP process. These dimensions are: comprehensiveness (comprehensive vs. limited understanding), formalization (formal vs. informal organization of the planning process) , focus (creative vs. control oriented planning), flow (top-down vs. bottom-up decision making), participation (broad vs. narrow) and consistency (high vs. low consistency in i.e. meetings). These process dimensions were derived from both strategic management and SISP literature. An organization can be mapped on these dimensions. As Segars and Grover (1999) clustered the data on the mapping of the process dimensions from 253 organizations, they discovered 5 patterns, so-called schools of thought and linked these with the approaches suggested by Earl (1993): (1) the design school (more less) equals the business-led approach, (2) planning school equals the technological approach, (3) the political school equals the administrative approach, (4) the positioning school equals the method-driven approach and (5) the learning school equals the organizational approach. The schools and Earl's approaches can be both mapped on the process and success dimensions.

According to Lederer and Salmela (1996) and King (1988), the IS strategy process results in a information plan, which is the tangible output of the IS strategy process. They propose that the more comprehensive the process, the more detailed and useful the information plan.

The information plan serves as an input for the actual implementation of the formulated strategy. According to Lederer and Salmela (1996), the quality of the information plan will affect the implementation and in this sense the outcome of SISP. Gottschalk (1999) operationalizes the plan implementation in the variables "rate", "extent" and "performance" of the implementation.

King (1988) was one of the first authors to formulate a model to assess the outcome, or in his words the effectiveness, of SISP, using the abovementioned input-process-output model. He proposes an evaluative model based on both objective measures and structured subjective judgments, which can be used as an overall assessment of SISP's success within a single organization. He suggested that the success of SISP should be assessed on the following criteria: (1) Effectiveness of IS planning (2) Relative worth of the IS planning system (ISPS) (3) Role and impact of ISPS (4) Role and impact of the ISPS (5) Performance of ISPS (6) Relative Worth of IS strategy (7) Relative efficiency of the ISPS (8) Adequacy of IS planning resources (9) Strategic congruence. In addition to King's attempt to assess the success of SISP, Segars and Grover (1998) formulated 4 dimensions for the measurement of SISP success: (1) alignment of IS and Business strategy, (2) Analysis of processes, procedures and technologies, (3) Cooperation, which reflects agreement and (4) Improvement in capabilities to achieve IS-Business alignment.

Dynamic approach of SISP

The presented models illuminate SISP as a one-stop process. In addition to the process models of King (1988), Lederer and Salmela (1996) and Mentzas (1997), Salmela and Spil (2002) proposed an

incremental model for SISP. They argue that most SISP models in literature are too explicit and formal to reflect the daily practice and effectiveness of SISP. Their continuous model contains four different phases of SISP: agreeing on planning objectives and stakeholders, alignment of business objectives and information objectives, analyzing IS resources and technology infrastructure and authorizing actions.

Information Systems across boundaries

The rise of the network society

"…as an historical trend, dominant functions and processes in the Information are increasingly organized around network" (Castells, 2000)

In a rapid pace, organizations form networks to cooperate, because these structures seem to have merits for the economical, political and knowledge position of an organization (Mulder and Spil, 2007). A network refers to the organizational structure of two or more organizations involved in long-term relationships (Thorelli, 1986). Chrisholm (1998) attempts to explain this tendency with complexity drivers in the organization's environment. Technological change like the rise of the internet, globalization, the vast accumulation of knowledge and the change to post-industrialistic believes and values increase the environmental complexity, which drives the formation of inter-organizational networks. For example, Singh (1997) argues that more and more organizations group together to help each other coping with increasing technological complexity. This stresses one of the important applications of networks: knowledge integration. Subsequently, Ebers (1997)gives an extensive overview of the organizational motives to form inter-organizational networks: networks can be formed for competitive reasons, cost reduction, knowledge acquisition and risk reduction. Oliver (1990) adds to these factors: necessity by law, asymmetric reasons like supply chain relations and legitimacy, such as reputation. Traditionally, researchers applied economical theories, like the Transaction Cost theory (Williamson, 1985), the Resource Based theory (Das and Teng, 2000) or public good theory (Monge et al., 1998) to analyze and explain network behavior.

New challenges of the network organization

The governance of networks demands a different approach than is common for the traditional hierarchical and centralized top-down steering (Kickert et al., 1997). Brown (1987) points out that members of a network: 1) are included because of their interest in, or their ability to contribute to constructive action; 2) are loosely coupled and participate in a system voluntary; and 3) are revolving activities and decision around a broad vision and a set of general goals that incorporate the interest of the individual organization. According to Chrisholm (1998) this results in an organization without superior-subordinate relations, or more precisely a network has less hierarchy and therefore gives more flexibility and autonomy to its constituents (Ching et al., 1996). Control is a responsibility of all partners and as Kanter (1994) and Doz (1988) state, a network requires a dense web of interpersonal connections. Usually, social mechanisms like sanctions and reputation are used to solve or prevent exchange problems within a network (Jones et al., 1997).

A distinct feature of networks is that the boundaries between what is internal and external to the organization becomes permeable and less obvious (Alexander, 1992, Cross et al., 2002). In this sense, the traditional dichotomous distinction between internal and external environment does not hold water. To clarify which inter-organizational context we research, we distinguish between inner and outer networks, i.e. the inner network consists of the core group of organizations participating in IO SISP. The organizations in the core group have strong ties with each other, while the organizations in the wider environment of the network have weak ties with one or more of the core group members. We make this important distinction based on Granovetter (1973), who also argues that a network's weak ties provide

most opportunities and give the strongest impetus for innovation. The configuration of a network and its ties can differ and change by several network dimensions, such as density, hierarchy, centralization, and the like (Kenis and Knoke, 2002, Provan et al., 2007). These dimensions show that the network context is important in understanding how IO SISP is approached by government organizations.

Inter-organizational systems

As the number of inter-organizational networks increases, Information Systems and Strategic Information Systems Planning more and more exceed organizational boundaries. Traditionally, Inter-organizational systems (IOS) can be defined as

"systems that involve resources shared between two or more organizations" (Barrett and Konsynski, 1982).

The boundary-spanning aspect of IOS implicate that these systems are deployed by inter-organizational networks and therefore differ in coordination and planning.

According to Suomi (1992), researchers use many different names and applications, like EDI or electronic markets, which makes the field a 'jungle'. Therefore, it is tough to make a single definition or a typology. Kumar and Van Dissel (1996) distinguish three types of IOS based on the interdependence between the partners in a network. The first IOS type is the pooled information resource IOS, which shares pooled resources among multiple partners. An example is a shared database. The second type of IOS is the Value/Supply-Chain IOS, which supports chain relationships. An example is an EDI application to facilitate data exchange in a supply-chain. The third type is the networked IOS, which represents a reciprocal interdependency among network partners. A web-based video conferencing systems can be an example of a networked IOS. Kumar and Van Dissel (1996) points out that these different types of IOS have their own related risks, both technical and socio-political. Another attempt to typify the jungle of IOS is made by Hong (2002). He classified IOS on the role linkage and the system support level. By mapping those two dimensions he obtains four different types of IOS:

- Horizontal network and strategic level: resource pooling IOS
- Vertical network and strategic level: complementary cooperation IOS
- Horizontal network and operational level: operational cooperation IOS
- Vertical network and operational level: operational coordination IOS

Choudhury (1997) defines three different types of IOS: (1) electronic dyads, for example between buyers and customers, (2) multi-lateral IOS, which represents a many to one relationship and (3) electronic monopoly. However, his typology of IOS is solely from an e-commerce perspective.

Theory of Inter-organizational Strategic Information Systems Planning

As IOS are deployed by inter-firm networks, it is logical to research the SISP process on an inter-organizational level, inter-organizational SISP (IOSISP) or, assuming that IOS are deployed in a network: IOS planning. The relatively higher complexity of IOS compared to intra-organizational systems urges the need of IOS planning (Finnegan et al., 1996). Although IOS planning is on a network level, the input-process-output model can be used for an broad overview of which parts of IOS planning has to be covered in research. When examining the current literature on IOS planning, only the process and outcome part are discussed. A short review will follow now.

Process dimensions

Finnegan, Galliers and Powell (2003) made a first attempt to examine the process of IOS planning by researching the three IOS types formulated by Kumar and Van Dissel (1996). They found two types of IOS planning environments: "the Monarchist", which implies a stronger organization in the network that can hold power over the others and "the Club", where no single authority is in the network. The monarchist planning environment follows a more comprehensive approach and the club planning environment a more learning or incremental approach.

Lin (2005) conducted a research among 202 CIO's in Taiwan to examine (inter-)organizational determinants of IO SISP. She defines this planning as

"identifying a portfolio of IOS applications that integrate all processes and allow an organization to enhance linkages between trading partners along the supply chain."

However, this definition is narrow when looking at the typology of IOS. Lin introduces three organizational variables to assess the process: 1) Top Management participation (Basu et al., 2002) 2) Organizational Centralization (King and Sabherwal, 1992) and 3) Technology competence (Zhu and Kraemer, 2002). The first two process variables resemble the process dimensions *participation* and *flow*. Mulder and Spil (2007) argue that technology competence resembles *improvement in capability* (Segars and Grover, 1999). The latter one is an effectiveness dimension measuring the improvement in capability. In addition, she adds two separate inter-organizational process dimensions 1) Competitive pressure (Premkumar and Ramamurthy, 1995a) faced by the network and 2) Trading partner readiness (Chwelos et al., 2001) among the network partners. Mulder and Spil (2007) summarize these inter-organizational factors in *Inter-organizational contingency*. Although IO contingency is a process dimensions, this can be compared with the environmental dimensions of the SISP model (Lederer and Salmela, Brown). Although Lin (2005) made a first start to measure the IOS planning process, the study is highly quantitative and Spil and Salmela (2007a) argue that it is incomplete, because it does not take the degree of cooperation among participants in account, which seems to be very important in a network.

Salmela and Spil (2006) propose a link between the SISP process profiles (Segars and Grover, 1999) and the coordination mechanism of networks. As they notice, an important distinction between contractual and both the relational and hierarchical networks, they propose three new inter-organizational process dimensions that determine the network's degree of relational formalization between network partners:

Contractual basis of decision making

- Financial basis of the agreements among network members

Certainty about the actual implementation of the plans that are made.

The degree of formal agreements, both contractual and financial, in a network can be summarized in the dimension *Inter-organizational Agreements*. The certainty dimension is related to de Man's (2006) division in certainty in relational certainty and organizational certainty. This dimensions is denoted as *Inter-organizational Certainty*.

In attempt to link the process dimensions to different types of networks, Mulder and Spil (2007) coupled the network coordination mechanisms to Hong's (2002) framework for inter-organizational systems. According to Mulder and Spil (2007), each IOS type defined by Hong (2002) has its own dominant coordination mechanism and SISP process characteristics. For example, a vertical – operational network can be a supply chain, in which the suppliers need to be convinced of the economical merits of the inter-organizational system. However, these linkages need more empirical basis.

In sum, previous literature provide us with the following process dimensions that are specific for IOS planning.

- (Top management) IO participation

- IO technology competence

  IO capability

  IO contingency, which contains the competitive pressure and trading partner readiness.

  IO agreement, which contains the contractual agreements and financial agreements

  IO Certainty, which contains organizational and relational uncertainty.

Mulder and Spil (2007) suggest to explore the remaining four process dimensions defined by Segars and Grover (1999): IO Comprehensiveness, IO Formalization, IO Focus and IO Consistency. They developed an interview model to assess these dimensions at a case in the Netherlands.

Spil and Salmela (2007b) argue that the lack of an hierarchy in a network would advocate the use of incremental planning approach, like the model of Salmela and Spil (2002) briefly discussed in the SISP section.

IO effectiveness dimensions

In order to assess the SISP process and effectiveness dimensions (Segars and Grover, 1999, Segars and Grover, 1998) on IOSISP, Salmela and Spil (2006) compare a SISP process at a university with an IOSISP process at fifteen healthcare partners and four knowledge institutes, which aimed to create a new information strategy for a region in the Netherlands. Although some dimensions seemed to be more dominant, like the degree of cooperation among partners, they include all four effectiveness dimensions in their conceptual IOSISP assessment model. Those four effectiveness dimensions are:

- IO alignment

  IO improvement in capability

  IO cooperation

- IO analysis

A glimpse of IO SISP in practice: the IZIT case

Mulder (2007) conducted a case study at a association of health care providers to test the process dimensions mentioned above. This network of 19 health care providers started the IZIT program, which aimed to use IT to enhance innovation in the health care sector. Ten top, user and IT managers were interviewed on the evaluation of this IZIT program. The evaluative questions were based on the dimensions mentioned above. Furthermore, general information like scope and duration were asked. When focusing on the dimensions, Mulder (2007) concludes that the process dimensions flow and top management participation are experienced as most important by the respondents. As certainty has an important impact on the IOSISP process, Mulder (2007) paid special attention to it. The case study revealed that clear goals has an important influence on the organizational certainty. Participation by partners in the network, especially top managers from the partners and the relations between the top managers, appeared to be important for relational certainty.

What IO SISP input dimensions are needed?

Previous research on IOSISP placed the emphasis on the process and effectiveness and formulated factors to evaluate process and effectiveness (Spil and Salmela, 2007a). However, characteristics of the network - both of its strong and weak network ties - should fit the planning process in order to conduct IOSISP

effectively (Teo and King, 1997). Hence, we are specifically interested in how planning approaches differ among networks. For this purpose, a network contingency model needs to be developed, in which the following input parts of the general SISP model are elaborated on:

- External environment, which is in congruence on network level with Granovetter's weak ties.
- Internal environment, which is in congruence on network level with Granovetter's strong ties.
- Planning Resources, committed to the IOSISP process

Problem definition

Purpose of the research

As previously stated, there has been little research conducted on IOSISP and the empirical basis is still limited. Additionally, the planning and implementation of large IOS, for example in the public center, face a lot of challenges. Therefore, we need to have more insight on the network context and its influence on the process and effectiveness.

Research question

The research will take place in the Finnish local government and takes the form of a multi-case study design. As the goal is to increase the knowledge on IOSISP, the research question is a knowledge problem and is stated as:

"How does network context influence process and effectiveness of IOSISP?"

The answer to this question will be derived both theoretically by means of a literature review of the next section and empirically by means of the two case studies conducted in Finland. An exhaustive literature review on which input dimensions, like network size, contingency, certainty, influence the planning process and effectiveness will give an answer on what according to past literature are relevant factors. Subsequently, an empirical part will place those factors in practice.

Importance

An in-depth description of IOSISP and the network context in which it occurs will indicate where processes get stuck or on the contrary are successful and will give directions to optimize IO SISP processes in order to make collaboration more efficient and effective. In this way this study can contribute to the design, coordination and evaluation of inter-organizational E-government projects.

Literature review

We conducted a systematic literature review on the influence of network context on the approach and effectiveness of IO SISP. All relevant articles from IS journals were searched and analyzed in a concept-based framework (Webster and Watson, 2002). The factors derived from this literature review are complemented with network literature in order place these contextual factors within the network domain.

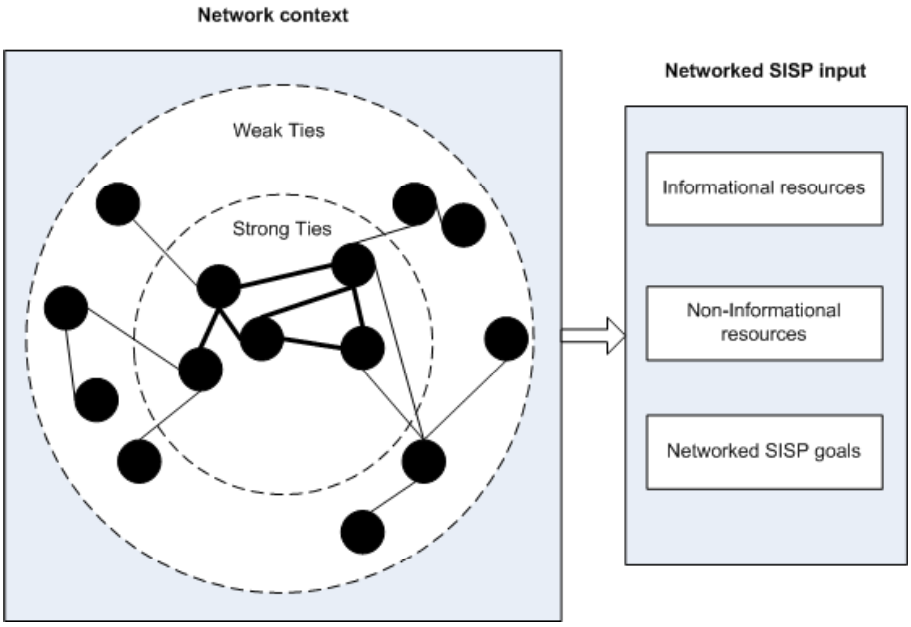

Figure 2. Conceptual research framework for IO SISP (context model)

The literature review resulted in a conceptual research framework shown in figure 1 and 2. The framework is based on the aforementioned SISP model (figure 1), but limited to 3 instead of 5 steps and is modified to explicate the network context and extended to incorporate concepts from the literature review. The framework consists of four major parts: (1) The network context (2) networked SISP input dimensions (3) networked SISP process dimensions, and (4) networked SISP effectiveness dimensions. The first two parts are visualized by figure 2. The network context consists of it's the involved organizations and their strong and weak network ties. The context of this network - like the size, structure and governance - denotes which informational and non-informational resources will be deployed and which goals the planning process aims to achieve. Figure 3 shows that these dimensions are direct inputs into the networked SISP process. The networked SISP process dimensions assess how the network organizations actually approach planning and are based on Segars and Grover (1999), Lin (2005) and Spil and Salmela (2007a). Finally, this process will lead to a certain effectiveness of the planning process (Segars and Grover, 1998). As planning can be seen as a dynamic learning process, the effectiveness has some impact on the network and its partners (Grover and Segars, 2005, Salmela and Spil, 2002). The next sections will discuss the contextual factors that were found for each category.

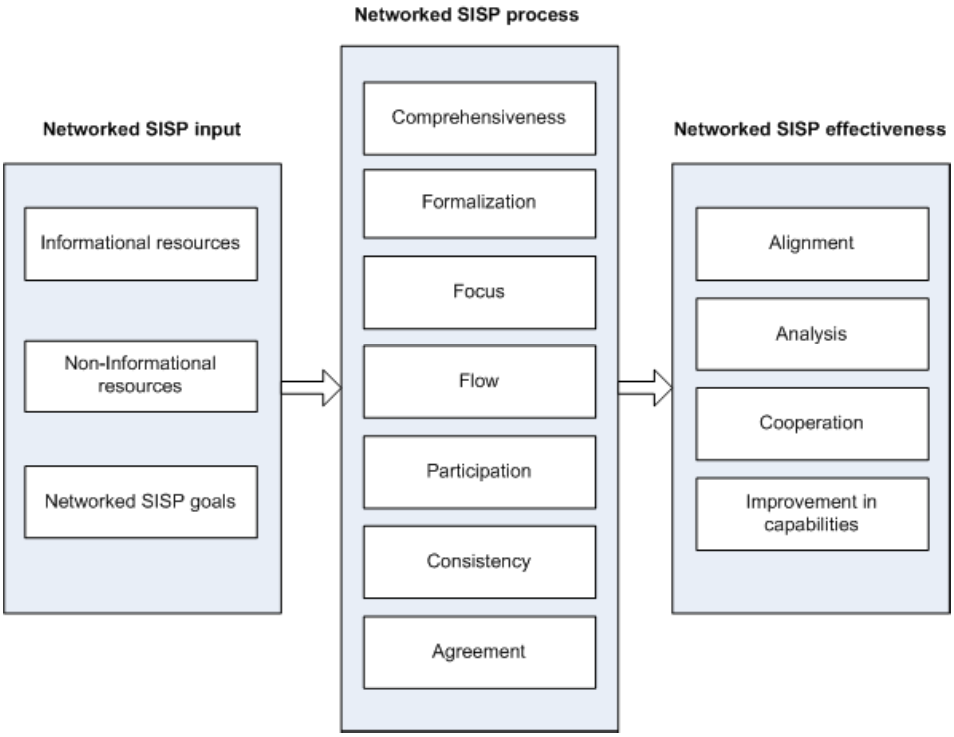

Figure 3. Conceptual research framework IO SISP (input-process-output model)

Methods and Concept matrix

In order to ensure that the most important journals in the field of Information Systems are included in this literature review, a systematic review has been conducted. The academic literature sources suggested by Schwartz (2004) and the search methodology proposed by Cochrane (Smith et al., 2006) were used for this systematic review.

The systematic review had three phases (see figure 4). First, keywords were derived from the research questions and a list of 18 combinations of synonyms was made. The keywords I used were combinations or variants of the words “Strategy”, “Planning”, “IS”, “strategizing”, “SISP”, “IO SISP” “networks”, “partnerships”, “alliances”, “formulation”, “process”, “inter-organizational”, “inter-organizational”, etc. These keywords were the input of the first search filter. ABI / Proquest was used to find as many as possible relevant articles. The second step was eliminating irrelevant articles based on their abstracts. Next, I checked the references of the relevant articles to find more articles that did not match the keywords in the first phase. In the last phase of the systematic review, all articles were read and selected on relevance and validity.

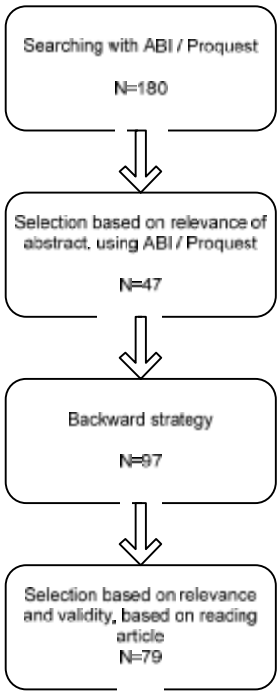

Figure 4. Overview of the search process

The 79 articles and 1 book were classified using three variables: the contingency category according to SISP input-output-process model, the focus of the article (Strategic planning, Strategic IS planning and network characteristics) and the method used. The concepts are listed in the concept-matrix, table 1, below. The matrix indicates whether an author covers a concept (Webster and Watson, 2002). Subsequently, the concepts form the paragraphs of the literature review. Each cross means that an article is discussed in the related paragraph.

Table 1. Concept matrix systematic literature review

	Concept			Focus	Method
Author	*Weak ties*	*Strong ties*	*Resources*		
Adler, 2001		X		Network	Conceptual
Alexander 1992		X		Network	Conceptual
Ang et al., 1995			X	SISP	Case study
Astley, 1984		X		Network	Conceptual
Bai and Lee, 2003		X		SISP	Survey
Bajjaly, 1998	X			SISP	Survey
Basu et al., 2002			X	SISP	Survey
Beckman et al., 2004	X			Network	Survey
Beekun et al., 1993	X			Network	Survey
Benbasat et al., 1984		X		SISP	Meta analysis
Brown, 2004	X			SISP	Conceptual

Byrd et al., 1995	X	X		SISP	Case study
Ching, 1996		X		Network	Field study
Conrath et al., 1992	X	X		SISP	Survey
De Man, 2006	X			Network	Conceptual
Doukidis et al., 1996		X		SISP	Case study
Earl, 1993	X	X	X	SISP	Survey and Case study
Ein-dor and Segev, 1978	X	X		SISP	Survey
Fink, 1994	X			SISP	Case study
Finnegan et al., 1999			X	Network	Survey
Finnegan et al., 2003		X		Network	Case study
Flynn and Goleniewska, 1993			X	SISP	Survey
Galliers et al., 1991		X		SISP	Case study
Galliers, 1987		X		SISP	Survey
Grover and Segars, 2005	X	X	X	SISP	Survey
Guimares et al., 1989		X		SISP	Survey
Gulati, 1998			X	Network	Survey
Hann andWeber, 1996		X		SISP	Survey
Henderson and Sifonis, 1988			X	SISP	Conceptual
Hoffman, 2007	X			SISP	Survey
Holley et al., 2004	X			SISP	Survey
Huxham, 1993		X		Network	Conceptual
Jiang and Klein, 1999			X	SISP	Survey
Kanungo, 2001		X		SISP	Survey and Case study
Kearns and Sabherwal, 2007	X			SISP	Survey
King and Teo, 1997		X		SISP	Survey
King and Teo, 2000	X	X		SISP	Survey
King and Kraemer, 1984		X		SISP	Conceptual
King, 1988	X		X	SISP	Conceptual
Kumar and Van Dissel			X	Network	Conceptual
Lederer and Gardiner, 1992		X	X	SISP	Conceptual
Lederer and Sethi, 1996	X			SISP	Survey
Lederer and Sethi, 1988			X	SISP	Survey
Lederer and Salmela, 1996	X			SISP	Meta analysis
Lucas and Sutton, 1977		X		SISP	Survey
McFarlan, 1971	X			SISP	Conceptual
McFarlan, 1983			X	SISP	Conceptual
McLean and Soden, 1977			X	SISP	Several
Mulder and Spil, 2007	X			Network	Case study
Newkirk and Lederer, 2006	X			SISP	Survey

Nolan, 1973		X		SISP	Conceptual
Ouchi, 1979		X		Network	Conceptual
Premkumar and King, 1991	X		X	SISP	Survey
Premkumar and King, 1992			X	SISP	Survey
Premkumar and King, 1994a	X	X	X	SISP	Survey
Premkumar and King, 1994b	X		X	SISP	Survey and Case study
Premkumar, 1992			X	SISP	Survey
Premkumar and Ramamurthy, 1995	X			SISP	Survey
Provan et al. 2007		X		Network	Literature review
Provan, 1984	X		X	Network	Case study
Provan, 1995		X		Network	Conceptual
Pyburn, 1983	X	X		SISP	Case study
Raghunathan and Raghunathan, 1990			X	SISP	Survey
Ranganathan et al., 1991		X		SISP	Survey
Ring, 1992		X		Network	Conceptual
Ruohonen, 1991			X	SISP	Case study
Sabherwal and King, 1992	X	X	X	SISP	Survey
Sabherwal and King, 1995	X	X	X	SISP	Survey
Sabherwal, 1999		X	X	SISP	Survey
Salmela and Spil, 2006		X		Network	Case study
Salmela et al., 2000	X			SISP	Action research
Sambamurthy et al., 1993	X	X	X	SISP	Survey
Segars and Grover, 1999	X		X	SISP	Survey
Spil and Salmela, 2007		X		Network	Case study
Sullivan, 1985			X	SISP	Conceptual
Teo and King, 1997	X	X	X	SISP	Survey
Teo and King, 1999			X	SISP	Survey
Volkoff et al., 1999		X	X	Network	Case study
Wang et al., 2003		X		SISP	Survey
Wildavsky, 1973		X		Network	Conceptual

Characteristics of the weak ties network

Traditionally, the external environment of an organization is seen as an input in the SISP process (Brown, 2004, Lederer and Salmela, 1996) and in that sense influences the process and effectiveness. However, in the network context, boundaries become permeable and the environment can be seen as a property of the network. We found in our literature review that the wider environment consists out of the following sub factors:

Type of industry

There has been some contrasting findings on the effect of the industry on a organization's SISP approach. Ein-dor and Segev (1978) discovered in their survey that the type of industry has an influence on the decision time frame of SISP. The information intensity of an industry might have an impact on the SISP process (Premkumar and King, 1991) as the resources can differ among industries (King, 1988). In this case, insurance companies and banks should have more profound SISP processes than chemical companies. However, other authors found no empirical evidence for a significant relationship between industry type and the practice of SISP (Conrath et al., 1992, King and Teo, 2000). The industry type does not seem to influence the effectiveness of the SISP process (Premkumar and King, 1994b). Culture, measured in Hofstedes' dimensions, has a light moderating effect on the performance of strategic planning (Hoffman, 2007).

Heterogeneity

Heterogeneity refers to the number and diversity of external factors in an organization's external environment (Sabherwal and King, 1995, Sabherwal and King, 1992). According to Teo and King (1997), heterogeneity has more influence on the SISP process than other environmental factors. Differentiation in stakeholders during planning makes it harder to get consensus (Byrd et al., 1995). For example, the number and diversity of stakeholders and interests involved in government planning process may not permit the degree of integration of objectives needed for SISP. Furthermore, the inclusion of external stakeholders with conflicting interests can be expected to influence the coherence and timeliness of planning (Holley et al., 2004). Heterogeneity increases the complexity of this process, as all external stakeholders need to be taken into account and hence SISP tends to be more comprehensive as the level of analysis within the SISP process increases (Sabherwal and King, 1992, Sabherwal and King, 1995). Kearns and Sabherwal (2007) argue that because of the structural challenges provoked by heterogeneity, top managers have a higher demand of strategic information systems and thus integration between business and IT. Therefore, there is a strong association between environmental heterogeneity and top managers' perception of IT importance

Dynamism

Environmental dynamism refers to the unpredictability and rate of change in the external environment (Sabherwal and King, 1995, Sabherwal and King, 1992). Synonyms used in IS research are volatility (Fink, 1994) and turbulence (Salmela et al., 2000). The implications of dynamism for SISP process is two sided: organizations need to adapt swiftly in a dynamic environment (Pyburn, 1983), for example, one can argue that a decentralized locus of SISP is necessary to anticipate to quick changes (Fink, 1994). Conversely, organizations need thorough analysis to keep track with the uncertainty (McFarlan, 1971, Newkirk and Lederer, 2006, Salmela et al., 2000). So, there is some discussion in the academic literature whether an incremental or comprehensive approach suits a dynamic environment. In practice, most managers are reluctant to decide quickly (Sabherwal and King, 1995). How to deal with uncertainty changes when an organization evolves: under conditions of increasing dynamism, organizational mechanisms are used by organizations to control and stabilize their relationship with the external environment (Grover and Segars, 2005). Beekun and Ginn (1993) and De Man (2006) argue from a resource-dependency perspective that under conditions of increasing environment turbulence, various inter organizational mechanisms are used by organizations to control and stabilize their relationship with the external environment. Provan (1984) and Beckman et al. (2004) suggest that environmental uncertainty will increase hierarchy, as the organizations will try to reinforce the relations with close partners. So, the degree of planning in a network will be related to the uncertainty organizations experience from the weak ties network.

Hostility

Hostility represents the threat of environmental elements that restrict resources (Sabherwal and King, 1992). Market pressure (Premkumar and Ramamurthy, 1995b) as an influence on the IOSISP process for instance, results in more hierarchy (Mulder and Spil, 2007). Hostility is associated with political processes, in which SISP is seen as a bargaining and negotiation process. Government agencies face more hostility (Bajjaly, 1998, Lederer and Salmela, 1996) and usually have an administrative approach (Earl, 1993), which characterize the process with low levels of formalization, comprehensiveness, consistency and participation (Sambamurthy et al., 1993, Segars and Grover, 1999).

Characteristics of the strong ties network

SISP varies according to different organizational circumstances (Galliers, 1987, Wang and Tai, 2003) and thus among different forms of networks. These organizational circumstances can be divided in the following sub factors:

Network structure and governance

The planning of inter-organizational systems is usually embedded in a network. There are three types of networks based on coordination mechanisms (Adler, 2001, Ouchi, 1979, Salmela and Spil, 2006): relational networks, based on trust (Ring and Van der Ven, 1992); hierarchical networks, based on authority; and contractual networks, based on agreements. The different networks and their coordination mechanisms are related to their planning approach. Usually, planning has been seen as the opposite to the incremental decision making of market mechanism (Wildavsky, 1973), in which bargaining, negotiating, price setting and contracts govern networks. Therefore, markets lack planning and are coordinated by transactions and contractual agreements (Ching et al., 1996). Hierarchical networks use formal planning (Alexander, 1992, Provan and Milward, 1995), and relational networks coordinate and plan informally (Spil and Salmela, 2007a). Figure 5 summarizes the relation between planning and network mechanism, visualized in Ouchi's triangle.

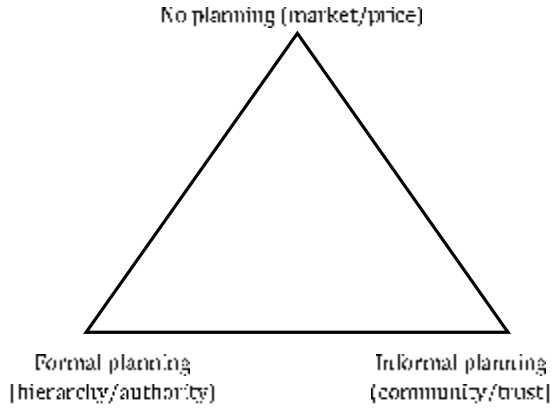

Figure 5. The relation between network coordination mechanism and planning.

The degree of planning is reflected in a network's governance structure, as there are three possibilities of governance in a network (Provan et al., 2007):

- Shared governance (Provan et al., 2007) or club (Finnegan et al., 2003): no unique, formal governance structure other than through the collaborative interactions among members themselves, which can cause unsophisticated planning (Huxham, 1993).

- Network administrative organization (Provan, 2007): an overarching authority (Volkoff et al., 1999) that supports the leadership in a network, which creates an hierarchy mechanism and therefore more formal planning.

- Lead-organization (Provan et al., 2007), Monarchist (Finnegan et al., 2003) or Focal organization (Ching et al., 1996): there is a more powerful organization in the network that has sufficient resources and legitimacy to play a lead role. A dominant partner causes hierarchy, which increases the comprehensiveness of planning (Finnegan et al., 2003) and control (Ching et al., 1996) in the network.

Network size

Large and complex companies tend to follow more systematic and formalized strategic IS planning practices (Conrath et al., 1992, Pyburn, 1983). As the complexity of the integration of business process and IT increases, a more comprehensive SISP approach is needed (Lederer and Gardiner, 1992). In contrast, small companies usually have smaller and simpler IS portfolios, which make formal planning approaches less critical (Pyburn, 1983). Doukidis, Lybereas and Galliers (1996) found that companies with less than 50 employees tend to have an ad-hoc and more informal planning process than larger companies. Ein-dor Segev (1978) argues that the size of an organization influences the decision time frame of SISP. Later research by King and Teo (2000) found no significant relationship between firm size and SISP approach. However, they point out that there can be a threshold value of firm size: above a certain number of employees, no significant differences in SISP approach will occur. This means that small organizations tend to have more informal and incremental SISP approaches than medium and large organizations. Firm size does not seem to influence SISP effectiveness (Premkumar and King, 1994b). Yet, the size of a network is an antecedent for network mechanisms and planning. A higher number of partners in a network is likely to lower the decision making authority and autonomy. This will lead to less hierarchy when the network is ill-structured. However, a network of many organization in the same sector needs more hierarchy to keep track of all parties and coordinate activities in the network (Astley, 1984).

Organizational culture

Organizations with a formal culture are more likely to have a comprehensive SISP process (Earl, 1993). Culture has an influence on decision making approaches in organizations, formalization and reward of innovation, which in their turn influence the SISP process (Ein-Dor and Segev, 1978, Guimares and McKeen, 1989, Kanungo et al., 2001). Organizational culture seems to have an influence on the integration between Business Strategy Planning (BSP) and SISP (King and Teo, 1997).

The role of the IS function

The role of the IT function has also an influence on the planning process. The planning process is highly related to the control architecture, centralized or decentralized, in an organization (Guimares and McKeen, 1989, Sabherwal and King, 1995). In contrast, Conrath (1992) found no relationship between the practice of IS planning and whether an organization or systems development was centralized or decentralized. Centrality of IT the function has a negative influence on shared domain knowledge and results in less improvement in planning capabilities (Wang and Tai, 2003). A lack of shared domain knowledge between IT and business managers decreases the rationality and comprehensiveness of the SISP process (Sambamurthy et al., 1993, Ranganathan and Sethi, 1991). Decentralization can boost the differentiation in internal stakeholders, which makes it harder to get consensus (Byrd et al., 1995).

Formalization of the IT unit is positively related with rationality of the SISP process (Ranganathan and Sethi, 1991, Sabherwal and King, 1995).

Central in the research on the relation between the role of the IT function and planning has been the stages of growth models of IS maturity (Galliers and Sutherland, 1991, Nolan, 1973, Grover and Segars, 2005). In an effort to improve its recognition of what policies are appropriate, the organization evolves toward a state of improved planning (King and Kraemer, 1984). Those models argue that SISP becomes more formalized when the IT function and its related budget matures (Nolan, 1973) and will end up in a balance of both rationality and adaptability (Galliers and Sutherland, 1991, Grover and Segars, 2005). The stage of growth model are subject to discussion, as there are some empirical evidences that do not support the relation between IS maturity and planning (Doukidis et al., 1996, Benbasat et al., 1984, Lucas and Sutton, 1977). According to Sabherwal and King (1992, , 1995), IS maturity is one of the organizational variables which influence the level of analysis in the IS decision making process.

The more the IT function is integrated with the business function, the more the SISP process becomes sophisticated (Sabherwal, 1999). Overlap in knowledge domains seems to be very important: business competence of IS executive is a good predictor of BSP-SISP integration (Teo and King, 1997) and top management competences on IS affects the planning process positively (Hann and Weber, 1996). This is reflected by King and Teo (2000) and Teo and King (1997) finding that the higher the hierarchical position of the CIO, the more IT is perceived as strategic in an organization and the finding that the relationship between the CEO and the CIO has a profound effect on the effectiveness of SISP (Bai and Lee, 2003).

Input dimensions

King (1988) mentions three kinds of inputs of the SISP process: informational inputs, non-informational inputs and SISP planning goals. These resources can differ among industries (Premkumar, 1992) and the political and social environment (Henderson and Sifonis, 1988).

Informational resources

Business goals and plans are important inputs for the process as they determine the horizon and the effectiveness of SISP (King, 1988, Henderson and Sifonis, 1988, Lederer and Gardiner, 1992, Earl, 1993, Premkumar and King, 1994a). BSP normally takes place before SISP and therefore determines the horizon (Flynn and Goleniewska, 1993) and the effectiveness of SISP (Lederer and Sethi, 1988). The integration of BSP and SISP varies from reactive integration, in which business goals and plans are a passive input in the SISP process, to proactive integration that highly integrates both planning processes (Teo and King, 1997, Teo and King, 1999). This degree of BSP and SISP integration and the goal of the SISP process together determine the maturity level of the firm (Ang et al., 1995) and increases SISP sophistication, because it enables opportunities for IS to add strategic value (Sabherwal, 1999). Top managers and users become more committed to SISP in case of an high integration (King and Teo, 1997). The quality of informational inputs has an influence on the perceived quality and effectiveness of SISP (Henderson and Sifonis, 1988, Premkumar and King, 1994b, Premkumar and King, 1994a). Experience and knowledge of SISP increases the comprehensiveness (Grover and Segars, 2005, Sambamurthy et al., 1993).

Non-informational resources

According to King (King, 1988), non-informational inputs are resources like personnel time, budget and computer time. Personnel time is represented by commitment of relevant stakeholders in the SISP process (Ruohonen, 1991). User, IT staff and top management commitment are very important for the quality and effectiveness of SISP (Basu et al., 2002, Premkumar and King, 1992, Raghunathan and Raghunathan,

1990). A lack of financial resources provokes political behavior (Sabherwal and King, 1992) and decreases the comprehensiveness and adaptability of the SISP process (Earl, 1993, Segars and Grover, 1999). IS development methods, often used by consultants, enhances comprehensiveness, but can be too rigid (Ang et al., 1995, Earl, 1993). Trust between stakeholders in the planning process is important: low relational certainty among network partners favor hierarchical or contractual control mechanisms. If partners in a network have worked more often together, the number of formal agreements in a network will diminish. Non-informational resources positively influences the quality and effectiveness of SISP (Premkumar and King, 1994a).

IO SISP goals and nature of IOS

The reasons for conducting SISP also influence its process (King, 1988, McLean and Soden, 1977). Organizations make a trade-off between implementation speed and fit with the organizational goals. The choice depends on what the organization values most. Networks with disparate partners need leadership and comprehensive planning to harmonize (Volkoff et al., 1999). A major factor for these IO SISP goals is the strategic importance of the (planned) IS in general for an organization and IOS in specific. The strategic grid model of McFarlan (1983) is used to categorize planning approaches (Jiang and Klein, 1999, Premkumar and King, 1991, Premkumar and King, 1992, Raghunathan and Raghunathan, 1990, Sullivan, 1985). Organizations that plan IS with a high strategic impact commit more resources to planning, have a long-term planning horizon, and perform quality planning, otherwise SISP tends to be more short-term and tactical. High strategic impact means higher levels of IS business integration and top management and user involvement (Premkumar, 1992). It also raises acceptance of SISP in the organization, enables resources, increases the perceived usefulness of SISP and increases the support from top management for SISP. The relatively higher complexity of IOS compared to intra-organizational systems urges the need for IOS planning (Finnegan et al., 1999). There is a relation between the network structure and the nature of IOS, denoting the structurability, coordination mechanism and conflict in coordination of the IOS (Kumar and Van Dissel, 1996). IOS planning is more fluid than IS, resulting in little planning (Sabherwal and King, 1995). Ownership is also important: the more partners in a network mutually own the IS, the more hierarchic the coordination and planning (Provan, 1984, Gulati, 1998).

Methods

In order to empirically substantiate the network characteristics we designed an explorative case study using in-depth semi-structured interviews and project documentation in a multi-cases design (Yin, 1994). We chose the interview method as it allows the researchers to dig deeper into the subject matter by using probe questions. The contextual factors on the network context and input dimensions that were found in the literature review were operationalized into interview questions. Relevant items from Mulder and Spil (2007) interview scheme on process and effectiveness of IOSISP were added to our interview scheme. The following subjects were covered by the interview scheme: introduction and focal project; IO SISP contextual dimensions; IO SISP process dimensions; and IO SISP effectiveness dimensions

Personal contacts of one of the researchers were used to conduct a pilot interview within a test case, a GIS development project in South-Western Finland. The pilot results were used to test and fine tune the interview on comprehensibility and reliability. Structured interview protocols were made to ensure validity.

Subsequently, two experts with vast experience in inter-organizational municipal projects in Finland were interviewed to obtain background information on inter-municipality projects in Finland and to indentify and select two projects that differed in planning approach and fitted in the definition of IO SISP. Case selection criteria were:

- Two cases that differ in planning approach (Paré, 2004).

- Three or more parties should be involved (Ruohonen, 1991)
- There should be a strategic planning process
- IOS should be involved
- Strategic process should be completed in order to assess effectiveness
- All relevant stakeholder groups should be represented: Top management, IT staff and users
- Finally, the case should within reachable distance

We chose to focus on two cases in which part of the core group of organizations that constituted the network was similar. Although this was not part of our aforementioned initial selection criteria, it provided us with the opportunity to vary on the planning approach while keeping most of the other variables constant for as far as possible in this type of qualitative in-depth study. We believe this approach to be more worthwhile than focusing on improving external validity with a completely different network group. In addition, we explicitly considered learning effects in the second case, as they provide us with an added temporal dimension beyond the single case at hand.

The first case was a bottom-up and project based case, VETUMA, in which four municipalities and two ministries planned an online identification and payment infrastructure between 2004 and 2006. The second case was more top-down and comprehensive: the same four municipalities formulated an IT strategy for the metropolitan area between the summers of 2006 and 2007. The municipalities and state agencies differed in size: from very small (700 employees) to very big (40.000 employees).

By using snowballing and theoretical sampling (Ruohonen, 1991) most stakeholders in both projects were selected. Participants worked in different organizational layers, but mostly only from the IT organization: from CIO's to analysts, as presented in table 2 and 3. It seems that IO SISP was highly a duty of the IT organization. Some participants were involved in both projects and therefore they were interviewed about both cases in the same interview.

A total number of 13 interviews were conducted with 15 stakeholders in a time period of two months. Two interviews were conducted with two stakeholder at the same time, in which the CIO and project manager of the same municipality were complementing each other in the interview. The interviews took place at the interviewee's office and took on average approximately 1.5 hour. All interviews were audio taped and transcribed. Apart from interviews, a large number of project documents were collected.

Table 2. Interviewed stakeholders VETUMA project

Position	Organization	Stakeholder group (Ruohonen, 1991)
Program manager	Information Society program	Top management
Analyst / Project manager	Helsinki	IT/IS management
IT director	Helsinki	IT/IS management
IT director	Vantaa	IT/IS management
IT director	Espoo	IT/IS management
Resource manager	Espoo	Top management
IT counselor	JUHTA	IT/IS management
IT Project manager	Espoo	IT/IS management

IT Project manager	Vantaa	IT/IS management
eServices responsible	HUS	Functional management
Senior advisor eServices	ValtIT	IT/IS management

Table 3. Interviewed Stakeholders IT plan project

Position	Organization	Stakeholder group (Ruohonen, 1991)
IT director	Helsinki	IT/IS management
IT director	Vantaa	IT/IS management
IT director	Espoo	IT/IS management
IT director	Kauniainen	IT/IS management
IS manager	Espoo	IT/IS management

Analysis was done by coding relevant words and phrases in the interview transcriptions with the qualitative data analysis program QSR NVivo. A conceptually clustered matrix in the analysis program was used to cluster all coded phrases on concepts (Miles and Huberman, 1994), in which the factors and interviewees were listed on differences and similarities. Subsequently, a cross-case analysis was conducted to compare both cases.

Findings from two cases in Helsinki's metropolitan area

The VETUMA case

The VETUMA project started in the beginning of 2004 and its planning phase lasted until 2006. Two project managers from the municipalities of Espoo and Vantaa recognized that they needed an online identification and payment infrastructure. Soon, the cities of Helsinki and Kauniainen joined. As more actors in the public sector could benefit, the project contacted JUHTA, a public administration recommendation council, and the Information Society program. Both parties entered the project to guarantee nationwide diffusion of the infrastructure. Reasons for the cooperation were mostly operational: efficiency, available to all municipalities and standardization to ensure interoperability. The founding members expected the planning phase to be one year, but eventually the planning lasted for more than years. Currently, about 20 governmental agencies use the VETUMA service.

Characteristics of the weak ties network

Several characteristics of the weak ties network had an influence on the project: e.g., technology, for instance the different forms of identification, increased technological complexity; legislation on cooperative procurement that increased juridical complexity; high autonomy of Finnish municipalities delayed diffusion; etc.

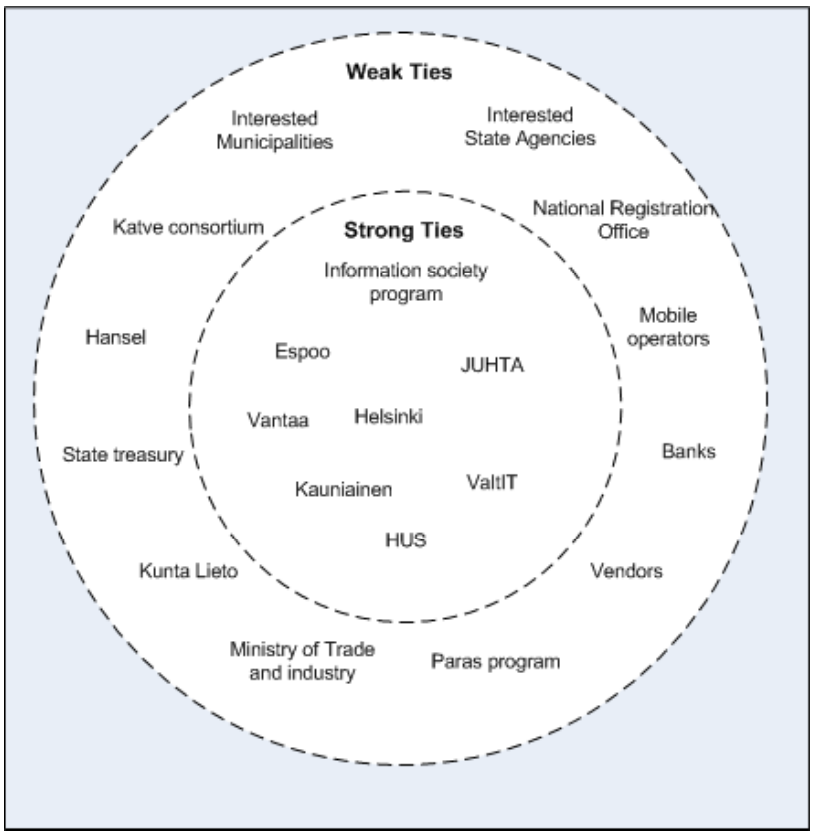

Figure 6. The constituents of the VETUMA network

The stakeholders of the network are visualized in figure 6. The VETUMA project had many weak ties: banks, the national registration institute and mobile operators were involved to provide identification channels; potential vendors for the ASP service; government agencies and municipalities that were willing or contemplating to adopt VETUMA; the Katve consortium of the tax, labor and social insurance agency that already had a similar identification system; the state owned procurement office Hansel; the ministry of Trade and Industry; the municipality association Kunta Lieto; and finally, the State Treasury. Some initially weak ties became part of the core network, like the public administration recommendation agency JUHTA, the Information Society Program, which was part of the prime-minister's office and Valt IT, the information management unit of the Ministry of Finance. Most weak ties provided resources for the project: Hansel provided procurement expertise, the state treasury took care of contracts and Katve provided documentation of their identification system. On the other hand, procurement law initially restricted the municipalities to use Katve's readymade identification system. In general there were no conflicts between external partners. However, the more weak ties you have to deal with, the more negotiations, discussions, bargaining, etc. For example, potential municipalities had to be convinced of the necessity of VETUMA, as there was no way to coerce them to use VETUMA. This increased heterogeneity slowed down the planning process and urged the need for comprehensiveness. Most of the stakeholders mentioned the difficulties in procurement law as the most important unpredictable occurrence during the project. The EU procurement law requires a common procurement office on behalf of the municipalities and state agencies to allow multiple partners to make use of the service. Now, every municipality that wanted use had to send in a power of attorney, which took a long time.

Characteristics of the strong ties network

The size of the strong connections in the network grew like a snowball: Vantaa and Espoo started, soon Helsinki and Kauniainen joined, then JUHTA, the Information Society program and the hospital district HUS joined. Later on, Valt IT became a dominant partner as it took the ownership of the IOS. These were the strong ties of the network, but there were a dozen weaker ties that were involved. This growing of the network made the planning process more complex. Some players were larger than others, like Helsinki is much bigger than Kauniainen, but the distribution of power was more related to the effort made by the persons themselves. Most parties benefited from the VETUMA system, but some on short term, like bigger partners that already have services that need strong identification and payment, and smaller parties that will use the service in the future bottom-up. Although the perspectives of the parties differed in scope and time schedule, there were no conflicts and in general there was agreement on the course of action. Most of the stakeholders in the core network knew each other quite well before the cooperation, especially the members from the metropolitan municipalities. This resulted in an informal and constructive atmosphere and cooperation mainly based on trust:

"Trust was the base of al […], that people trusted in that these few people will work for us and this is good for all of us and they trusted us, and that is one of the most important issues. Even we have a lot of organizations, there were few key persons and they were trusted."

When the planning phase went into the procurement process, contractual and financial agreements were made. The network governance mechanism moved towards market based coordination. Formally, there were two leaders in the project: the chair in the project group from Vantaa and the chair in the steering group from Helsinki. Informally, the member of the information society program played an important leadership role. The IT needed for the project was mostly distributed among the network partners, so decentralized and informal. According to one of the stakeholders:

"It was more like if any kind of procedure were needed, there was decided after the need arose."

As the procurement process developed, the IT function became more centralized with the Ministry of Finance and the vendor, which made the planning more comprehensive.

Input dimensions

The SISP goal of the network was to start a project to come up with a common IOS, which formed an infrastructural layer for eServices. The VETUMA infrastructure is a "pooled" IOS system, shared by many applications among multiple organizations, which can be a potential reason for the high level of agreement in the collaboration. The IOS is of high importance on an operational level as this will be the infrastructure for eServices that need identification of citizens, but VETIMA is not perceived as strategic:

"VETUMA services are rather a must than a competitive advantage. Of course without this kind of services you cannot offer certain types of eServices.

The ownership shifted from a distribution among the municipalities, based on a inhabitants ratio, to the Ministry of Finance. Although there has been a lot of cooperation and there were meetings on different levels in the metropolitan area, there was no strategy or policy that was a direct input: project managers from the cities of Vantaa and Espoo came up with the idea for VETUMA. Later on, the information society program integrated the VETUMA project into their own strategy. In a way this project was quite unique, as the municipal sector and state government sector had not cooperated before on IT projects, so no one had experience with such a project. involved stakeholders came from IT departments, such as CIO's, IT project managers and analysts. Top management and users were hardly involved, as the IT management stakeholders found the VETUMA system to operational and technical to actively involve them. In addition, they argued that most top managers were not interested in VETUMA. There was knowledge overlap between CIO's and technical IT professionals: some members of the project group

were member of the steering group, so most members of the steering group knew about the technical side of the project and most technical people in the project group knew about the strategic goals. Initially, funds for the project came from the starting municipalities, but soon most funds came from the information society program and the ministry of finance. The ministry of finance information management unit, Valt IT, decided to pay the start-up costs for the first two years of the project. Naturally, most human resources came from the organizing partners. Most of the human resources, like members of the planning team, did not get any extra time in their job for the VETUMA project. No methods, explicit guidelines or consultants were used during the planning phase.

Process and effectiveness dimensions

The planning process started quite incomprehensive with few documentation and analyses, but became gradually more comprehensive when the state government and the vendor came into play. On the degree of formalization, the project was quite informal and project based. For example, there was no formal appointment process or formal organizational status. Standardization and cost-efficiency were very important, so the project was strongly focused on control instead of creativity. Most decisions were made in the project group, at the lowest level, but some decisions that were about the procurement were made in the steering group or even on organizational level. Participation from the core network was quite broad, most organizations had 2 representatives and the mixture of representatives was quite flexible. Most organizations coordinated the decisions within their own organization, without needing formal approval. The project group met on a regular basis, but the frequency differed a lot: sometimes weekly, sometimes monthly. The steering group met approximately 12 times during the year..

The planning was not really effective in the sense of new plans or ideas and alignment between Business and IT. The stakeholders had the opinion that VETUMA was developed nationwide, without taking into account lack of existing services and integration difficulties. On personal level, stakeholders learned a lot about interagency cooperation, procurement law, technology and how to IO planning together. However, how much the organization itself has learned depends on knowledge transfer. There is a strong commitment to implement the VETUMA system. More than 60 organizations joined the project and about 20 organizations are actually using VETUMA. However, there are no penalties, because Finnish municipalities are still very independent. The experiences in planning VETUMA are useful for future planning project, but it did not affect the planning processes of the network partners.

IT plan case

Since the 70's, the metropolitan area has been cooperating on IT projects. The development of an IT strategy for Helsinki's metropolitan area started in the summer of 2006. A few years before the city majors were stimulated by the central government to discuss cooperation. They agreed on a strategy describing services that could be done together. All functional departments, including the IT department, were asked to make joint strategies and therefore the IT directors and some functional IT manager formed a planning committee. Based on the general strategy and the plans of the functional departments, they investigated the impact on the IT function and set high-level goals on common e-services. Within the schedule of one year, the committee delivered a plan approved by the metropolitan area council and majors.

Characteristics of the weak ties network

The stakeholders of the IT plan case network are visualized in figure 7. Traditionally, Finnish municipalities are very autonomous. The first cabinet of the Finnish prime-minister Vanhanen decided that this autonomy has to decrease in order to achieve more efficiency in the municipal sector. Therefore, the central government put pressure on the municipalities in the metropolitan area to increase cooperation.

This external force was the initial impulse for the majors of the metropolitan area to develop a strategy on common eServices. On the other hand, the development of the IT plan that originated from this state government pressure was more less an internal project, highly embedded in the network and its structure. Only one weak tie was involved in the formulation of the IT plan. The Local Government IT Management Unit - Kunta IT - had an advisory and knowledge base role in the project. Kunta IT serves the same goals, but was informed about the differences between the metropolitan area and other parts of Finland, as the needs and problem differ immensely. No unpredictable events from weakly tied parties had happened during the project, which reflects a stable environment.

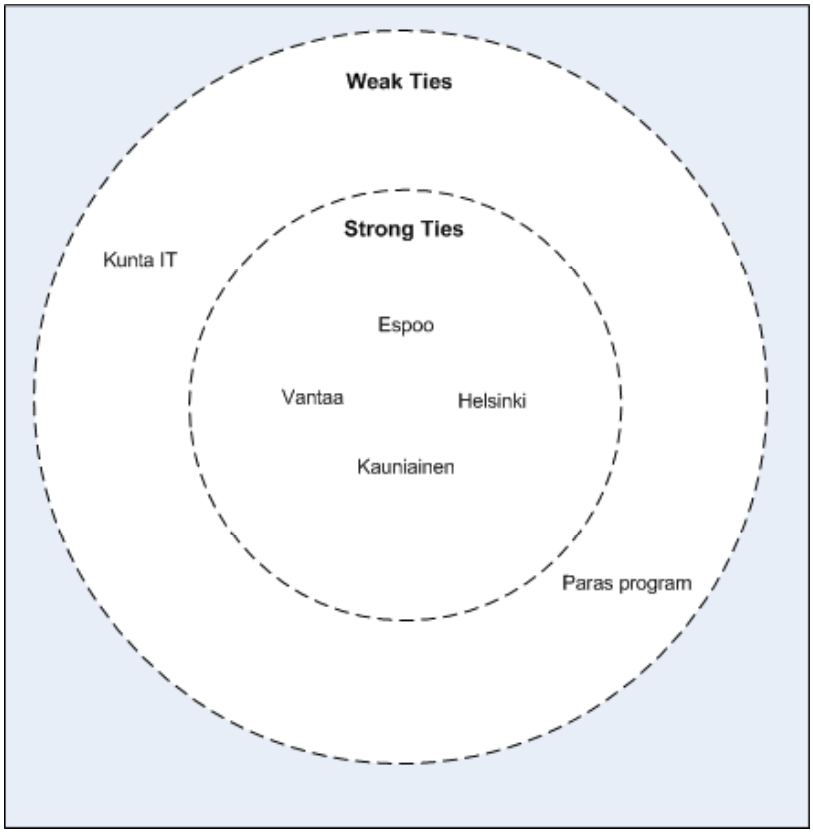

Figure 7. The constituents of the IT plan network

Characteristics of the strong ties network

The metropolitan area network consists of four municipalities: Espoo, Helsinki, Kauniainen and Vantaa. This network has vast experience with working together, in several organs, like formal and informal committees, boards and on top of the metropolitan area a council, in which politicians of all the network partners decide on common fields. The cooperation resulted in an official metropolitan area coordination group for information systems and will consist of it directors of the CIO's of the four cities. There were no contractual of financial agreements made between the partners. In sum, the network of Finland's metropolitan area is both based on hierarchy and trust and partly governed by an overarching authority. There are differences among the network partners: the smaller the municipality, the more important the need for cooperation, as joint resources can enable services. Furthermore, the more effort that is made by a member of the planning team, the more decision power he or she has. Although Helsinki is the biggest player in the network, Espoo was democratically chosen by the network council as the chair in the

planning team and therefore had the leadership role in the project. There were some disagreements in the goal phase of the planning process. However, technical fields - like IS - stay, according to the stakeholders, a neutral and rather difficult topic to understand and therefore irrelevant for political behavior. The members of the planning team worked a lot together, so they knew each other very good and trusted each other. The good atmosphere that resulted of this eased the cooperation. The IT function in the network is still decentralized among the four network partners and the IT needed for the project was informally arranged. However, it was agreed in the plan that it will be centralized among the joint services in the future.

Input dimensions

A clear input to the formulation of the IT plan was the strategy of the majors and the functional divisions, which made the project very top-down. On the other hand, it did not increased the creativity in the planning process, like a stakeholder commented:

"we couldn't do something that was new..sometimes we had do something stupid because it was a political decision, it didn't come from us sometimes".

Most stakeholders had prior experience and knowledge with planning IOS in the municipal area, but it was for all the first time that a more institutionalized approach, instead of project approach, was chosen. Formulation of the IT plan was a job for the IT management: IT directors and functional IT managers were highly involved, but only 1 technical IT professional was directly in the planning committee. The top-down approach assured that top-management was fairly committed and that the IT directors knew about the strategic goals. The majors on the other hand knew less about the technical details. The IT planning group had to report two times to majors and metropolitan council. The user managers were highly committed: their functional strategies were a direct input and during the planning process workshops with functional departments were held. There were hardly any funds needed for the project and for the planning committee the project was part of their job and so there was no extra time dedicated. This was for some persons problematic:

"it is quite hard, for example I was in a big competition at the same time and I was in that project also in the beginning. "

No planning methods or consultants were used by the planning committee. The goals of the planning were strategic: the IS that has to be integrated in the future are on vital municipal functions, like healthcare and education, so of major importance. This can be a reason for the top-down approach. Yet, the current and planned dedicated IOS are less important, like the VETUMA system, and most IS are not integrated. So, the ownership of the IS is distributed among the cities and has not been an issue in the formulation of this IT plan. However, some stakeholders foresee discussions about ownership of IS in the future.

Process and effectiveness dimensions

Analyses based on statistical data were made to investigate the current IT resources, formulate goals and strategy on future status and identify projects. The resulting strategy document was pretty comprehensive, but did not contain guidelines how to implement the strategy. There was high degree of formalization: the members were formally appointed by the metropolitan area council and the distribution of chairs was a formal political process. Stakeholders saw the planning team as an official appointed committee. The focus of the project was on control:

"We just identify just the items we had to work on in the future. We didn't try to invent anything especially new on the strategies or the strategic goals or something."

There was a top-down structure for the final decisions and top managers gave guidelines for decisions in the planning team. The planning team made a proposal which was approved by the city council and the majors. Two representatives per organization, mostly one IT director and one IT user manager, were formally selected, but broad participation on management level was achieved. There were frequent meetings, about 15 in total, which indicates a high degree of consistency. Meetings are still continued in a new regional IT board.

The alignment was moderately high. The planning committee came with few concrete plans or objectives, as it stayed on a very strategic level. On the other hand, the business goals came clearly back in the IT strategy plan.

Analysis was high: stakeholders learned a lot about each other's IT organizations and about collaboration.

"Well, personally to me it was very, it was a good learning process, mainly I learned a lot about these other cities, how they have organized their IT."

The IT strategy is not detailed, so commitment to implement the plan depends on further discussions on the feasibility. There are no formal penalties, but the politicians approved the strategy, municipalities and their departments are stimulated. Therefore, the degree of cooperation is low to medium. There is some improvement in capabilities, as this was a good exercise to cooperate together and the exchange of each other's IT strategy and best practices gave insight for the organization's own planning process. However more knowledge management is needed as one stakeholder commented:

"I think it should be much easier if we have a fulltime secretary, who can record things fulltime and can collect statistics, like this, it should be much easier."

Cross-case analysis

This cross case analysis is based on a cross-case concept-matrix (Miles and Huberman, 1994), which can be found in Appendix B. Although the number of cases and interviewees are limited, the analysis of both cases demonstrates that the context of the network and its goals have an influence on how the network approach SISP. The duration and delay in the VETUMA project is significantly larger than in the IT plan case. According to the stakeholders this is mainly caused by the configuration of the network and external forces: the VETUMA project started with two municipalities and grew finally to over 60 organizations in the implementation phase. The core network, *strong ties*, increased from two to seven and the project had to deal an increasing number of *weak ties*. The environmental heterogeneity and network complexity became larger during the project and the need for comprehensiveness in the planning process raised. The influence from heterogeneity on how the network approached SISP supports earlier findings by Astley (1984) and Sabherwal et al. (1995) and the influence from the high change in the configuration of weak ties complies with findings by Salmela et al. (2000). Although Granovetter (1973)'s weak ties increased complexity, they were a source of resources for the project and proved to be important to solve impeders. Environmental uncertainty had a role in the IT plan case, in the form of pressure from the central government on municipalities to merge and cooperate. This was picked up by the majors of the metropolitan area and a reason to reinforce their strong ties, which is in line with findings by Beckman et al. (2004) and Provan (1984).

Both cases show that existing relations between stakeholders increase the relational certainty, in other words trust, and therefore has a positive effect on the participation, which gets more flexible, and improves the learning effect and in that sense the networked SISP effectiveness. For example, in the IT plan case members of the planning team exchanged best practices on IT strategy and governance, which would unlikely occur with low relational certainty. Apart from trust, the cases differed a bit in network governance mechanism: in the VETUMA case, financial and contractual agreements were made for the

procurement process, which resembles a market mechanism. On the other hand, the metropolitan city council, the top-down initiation and the formation of a new regional IT board within the IT plan case were obvious signs of hierarchical mechanisms. As hierarchy, in contrast to market mechanism, is associated with planning, this could explain the differences in formalization, comprehensiveness and flow. This emphasizes the findings of Alexander (1992) and Spil et al. (2007a). Both projects did not have a single dominant party, as the power during decisions was mainly based on the effort made by the representative self. The role of the IT function was similar for both cases at the start of the VETUMA case: the partners delivered IT resources in an informal way and decentralized. However, when Valt IT and vendor entered the VETUMA project, the IT function became centralized and more formal: the supply part was responsibility for the Vendor and the demand part for Valt IT. This changed made the planning process more comprehensiveness, which was predicted by Sabherwal et al. (1995).

Regarding the input dimensions, a remarkable difference was the input from a business strategy and its influence on SISP approach and effectiveness. The IT plan case was clearly started and feed by the strategy and vision of the majors, which resulted in a high level of formalization, a top-down flow in the decision making and a high level of alignment, as the strategic goals were clearly transformed into IT goals in the IT strategy plan. On the other hand, it The SISP goals and the strategic importance of the IOS were important factors in how SISP was approached and the resources.

Conclusions

Key findings

The objective of this paper was to explore how the context of IO SISP has an impact on the approach and success of IO SISP. This has been explored by a systematic literature review and the analysis of two cases in the metropolitan area. The key findings are:

- The comprehensiveness of the planning process should fit the complexity and dynamics of the network and its environment, in order to keep track of all strong and weak ties. There seems to be a paradox between the complexity of the weak ties, which slows down the planning process, and the resources weak ties provide or enable.

- Environmental uncertainty can reinforce strong ties within the network and increases the use of hierarchical network mechanism, which increases the degree of planning. On the other hand, market mechanisms, due to influence from private sector, decrease the degree of planning.

- IO SISP that builds on prior experience and existing relations will increase trust in the planning process, which increases the learning process.

- As networks are less hierarchical, the IT function is mainly decentralized and fairly informal, which decrease the rationality of the planning process. As networks are going to cooperate more on the same services, this can shift to a centralized and formalized IT function.

- Informational resources, such as the input of a strategy or policy, have an influence on the non-informational resources, like commitment from user and top management, how SISP is approached and how well it is aligned.

- The degree of informational and non-informational resources provided to the research process depends on the perceived importance of SISP and the IOS that are planned or going to be integrated and the commitment of weak ties. The empirical findings demonstrate that SISP is still perceived as of minor importance.

- The degree to which SISP is a learning process depends on how the network and its partners deal with the conversation and diffusion of knowledge. External partners, like the Local Government IT management unit Kunta IT, can function as knowledge base and ensure that prior IO SISP knowledge is reused.

Limitations

External validity

As case studies place phenomena in its context, this research method was highly appropriate for this research. However, this context may decrease the external validity as no statistical generalizations are possible (Yin, 1994). Furthermore, the number of cases included in this research is very limited and this fact highly limits any generalizations. Nonetheless, both cases were used for in-depth qualitative data instead of generative data, which suits the explorative nature of IO SISP and this study. Another constraint is that the two cases in Finland's metropolitan area can deviate from other IO SISP cases in various ways: the governmental context, the heterogeneity in network partners, cultural aspects, etc. So, more case study research, especially with multiple-case designs, is needed to derive sound inductions with meta-analysis of the cases. The systematic method by Cochrane could be used to derive sound conclusions (Smith et al., 2006).

Learning effect

Both cases consisted of the same network partners and therefore a mild overlap in stakeholders. This has both a limitation, as the network can have a learning effect, but it has also methodological advantages as it increases the ability to make controlled observations (Lee, 1989). The VETUMA cases, which occurred a few years earlier, was only several times briefly mentioned in the interviews of the IT plan case. These stakeholders mentioned that VETUMA has been only one of the many cooperative IT projects in the metropolitan network. This implies causal ambiguity between both cases, which decreases learning effect.

Biases by stakeholder perceptions

A bias in the interviews can be the different stakeholder groups in the planning process, as defined by Ruohonen (1991). This can give some contradictions in the data, as perceptions among those groups can differ. For example, the rigor of technical analyses made in the planning process deviates from the "top managers" and the "IT/IS management". However, this bias is not new for IO SISP research, as Ruohonen's stakeholders were derived from SISP projects and therefore traditional SISP research shares the same biases. Still, one should be aware of that the process and effectiveness is still a perception. Quantification of the research instrument could objectify these perceptions.

Mutual exclusivity of the research model

The interview model was based on the contextual factors found in the systematic literature. Despite the rigor of the literature review, there is still some risk that not all relevant factors are included in the research model. The degree of openness in the interview model allows for addition of relevant factors by the participants, but perhaps a pre-study based on long unstructured interviews would investigate factors that were not included in prior literature. However, such a pre-study was out of the scope of my research and both open and probe questions in the actual interviews guaranteed enough room for addition.

Managerial contributions

Think before act: fit inter-organizational structure and SISP design

From a management perspective this paper gives an indication of the importance of network context for the SISP approach and success. It gives practitioners insight on how planning within their network is affected and thus how to design and organize their . A network with many stakeholders, both in, close to or outside the planning team, should take a comprehensive and formal approach, in which a broad participation of the network partners are represented. In contrast, when dealing with a low complexity, an incremental approach would be appropriate. Many of the strategic activities in the VETUMA case are very emergent and given the effectiveness of these activities a more planned behavior would be more proactive. On the other hand, the IT plan case was sometimes too strategic (top-down flow) and formal, which would not be necessary in a network where everybody know each other quite well.

Balance control and agility in SISP approach

The initiation by top management and a formulated strategy as an input in the IO SISP process seem to ensure an higher level of alignment of business and IS objectives. On the other hand, no strategy as a direct input enhances lateral thinking and so the creation of new ideas. Practitioners should take this balance in account: SISP is not solely a duty for one stakeholder group, like top managers or IT / IS managers. For example, the participation of top managers enhances alignment and the participation of user managers enhances the degree of cooperation. This finding is in line with Segars and Grover (1999).

Provide sufficient time for cooperation

Both cases showed that most of the stakeholders of the planning process do cooperation, like IO SISP, on top of their other duties. This give practical issues like planning meetings and committing time to IO SISP, as most of the stakeholders must give their priority to daily management. This impedes the coordination of projects like VETUMA. Organizations should recognize activities for IO SISP as important and provide extra time or create new positions that deal with cooperation. Large organizations, like the ministry of finance or HUS in the VETUMA case, already have specific functions for inter-organizational IT projects.

"The devil is in the details"

The two cases studies highly differed in level of detail. The VETUMA case defined all functional and technical requirements for the IOS and was able to start implement the strategy right away. In the contrary, the IT plan case made only strategic goals. Although it takes more time to agree with all network partners on details, it can increases the likelihood of implementation and it saves time for later discussions on details. Stakeholders in the IT plan case argued that the high level of detail only postponed the discussions about tactical details, so the delay or resistance can come later. Therefore, I recommend that practitioners should be aware of the level of detail of the plans. Inclusion of functional and technical experts can increase this level of detail.

Future research agenda

Qualitative vs. Quantitative research

Due to the limitations in external validity, the contextual factors and their relations derived from literature and empirics need further substantiation by both qualitative and quantitative research. This research should be gathered in the first phases of De Groots' empirical cycle (De Groot, 1969), namely *observation* and preliminary *induction* (see figure 8). Research on a wide array of networks in different sectors and settings should make proper *deductions* and further *test* these with empirics. This makes it possible to make a contingency model of the IO SISP, which enables researchers to the generate normative guidelines on how to fit the inter-organizational structure and the IO SISP process to maximize effectiveness.

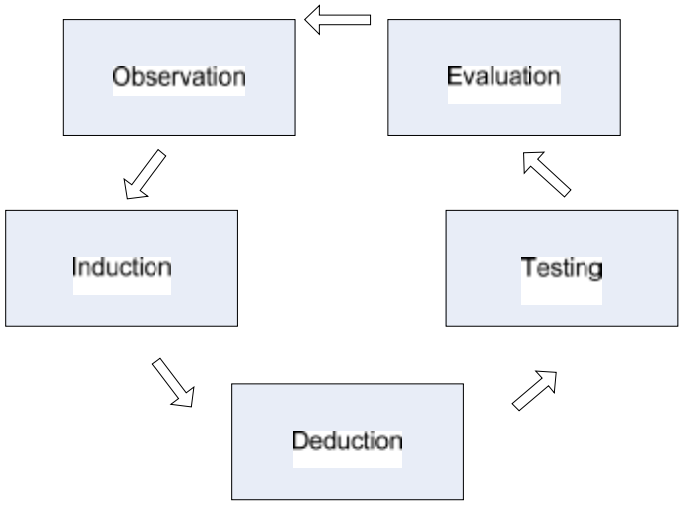

Figure 8. Empirical cycle (De Groot, 1969)

Conjunction of network and IS literature

This research paper makes a preliminary attempt to connect network literature to traditional SISP and IOS literature. The theory of strong and weak ties (Granovetter, 1973) seems to be very promising in describing the fluent nature of networks and IO SISP. This model is an example of how the perspective from network literature adds value to prior models on IO SISP. However, this paper is still from a traditional SISP perspective (King, 1988, Lederer and Sethi, 1996). In order to breakthrough this traditional SISP domain, future research on IO SISP should make more use of network research to study IO SISP from a fully network perspective.

IO SISP dynamics

Networks and planning seems to be dynamic and although both case studies tried to reflect the dynamic nature of IO SISP in Helsinki's metropolitan area, future research could focus on how IO SISP evolve over time, like the SISP stages model of Grover et al. (2005). A longitudinal research design among several networks, during their full life cycle, could demonstrate if there are some stages in the evolution of IO SISP or else that networks and its planning are pragmatic and opportunistic in nature. Apart from network level, microanalysis of the dynamics within IO SISP projects could demonstrate how over time the network and its planning team acquires or loses resources, provided by weak ties, overcome impeders,

or how it grows or become smaller. The VETUMA project already showed such dynamics: an idea of two organizations was picked up by members of the same region. Later on, interested parties took their stake and provided resources, like the jurists from Hansel.

Epilogue

"Research is what I'm doing when I don't know what I'm doing."

Wernher Von Braun

How awkward the quote above, it describes how my research in September 2007 started and how I entered a highly specialized research field of IOSISP, which was quite unknown to me. The first few months of my research, I took a lot of time to get acquainted with the core concepts of SISP, network literature and IOSISP. Enthusiastically, I made a strict planning with a week-to-week overview of my activities. Soon, learning this new field took more time than I expected. Fortunately, one of my supervisors advised me to take as much time for my research proposal as I would need, because this extra time would pay off in the end. And I am glad I did. Although it gave one month delay, the decent project proposal was a clear guide for my own understanding what I was going to do in the research field. This graduation research was my first experience with case study research and although the naturalistic stream within qualitative research would suggest to go to the research field as a "Tabula Rasa" (Silverman, 2000), the baggage of the literature helped me more to understand the interviews. I noticed that the more interviews I did, the more I created a conceptual model in my head, which helped to elaborate more on specific themes later in the process. In that sense, explorative case study research is like a big Sudoku: the more interviews you took, the more numbers fall in place. The empirics helped me to reflect on my project proposal and the findings in prior literature. This brought more focus on the initial plans and proposal and finally resulted in a strong network focus for the ICIS publication. I can recommend the analysis tool QSR NVivo for further qualitative research, as it brings rigor and structure in the data analysis. However, the master programs of Industrial Engineering and Management and Business Administration should teach coming bachelor and master students in how to use the program, so it will be easier to use it during the research process. In the end, although I started as a novice in IO SISP research, I now feel like an expert-in-progress, which could be concluded by a doctoral thesis.

There are several points I would do differently if reflect on my own research. First of all, I worked in a quite serial order: first finishing my research proposal, then finishing the research methods and instruments, subsequently arranging cases and participants, etc. It needs some guts to take a more parallel order and for example start finding appropriate cases and participant without having a ready-steady interview. This would have saved me at least 1 month and a lot of stress in the end phase of my stay in Finland. Theoretically, I focused more in the end of my research, but next time I could do it earlier. In the end, the scope is still wide and maybe too ambitious for a master thesis: I measured all the three parts of the IO SISP model: network context and resources, process and effectiveness. A truly explorative research would solely focus on the network context and the derived planning resources, but on the other hand no causal relationships with the process or effectiveness would be possible. In addition, measuring process and effectiveness in both cases was only a bit more work, but enables other researchers to make a cross-country comparison.

The IS research field differs a lot from the psychological research field I already had experience in. I noticed that psychological research emphasizes the importance of methodology more, especially quantitative methods. Of course, this has to do with the nature of the research phenomenon: it is easier to control variables in experiments with individuals, than control organizational variables. This implicates that IS research naturally takes more an holistic approach, in which the context of the research phenomenon is not affected. However, I think both psychological and IS research could learn from each other. Furthermore, in my opinion IS research should benefit from other research fields, like network literature in my case.

I made the explicit decision to conduct the research for my master thesis abroad. This was not always as simple as it sounds. Although most Finns speak English, I experienced some difficulties in expressing myself and understanding the participants, especially when a translator was needed. The distance between my supervisors and me was bridged by digital media, but is still not the same as regular face-to-face contact. Luckily, my research was conducted at the Information Systems Science department of a university, so my Finnish supervisors could help me also with the content of my research and check the quality of my work. Doing research abroad has another impeder: when staying abroad, you naturally want to learn the local language, culture and travel around the country. Next time, I should take these factors in account.

Finally, some reflection on my supervisors. My first and second supervisor resemble together the balance of control and agility: Ton, as an expert in the field, gave me creative and highly conceptual input, which was very important in the starting phase of my research. Michel was not totally acquainted with SISP research, but was a very critical sparring partner, which brought methodological rigor in my literature review and case study. Measured by response time and help with publications, I noticed that my second supervisor had more time to guide me. Nonetheless, both helped me to produce this research and report.

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Appendix A: interview model

Introduction

1. What is your name and current job title?
2. In which roles have you been involved with the joint IT plan project during which period(s)?

Focal project

3. What was the expected duration of the project (short – long)?
4. What was the goal?

a) Efficiency / standardization / improvement / one-time political?
b) Innovation / New knowledge or capabilities / long-time political?

5. In which, if any, other joint projects was your organization involved?

Context of the project

Weak ties of the network

6. What kind of external parties or forces influenced the project?
7. Did the project have common goals with those external parties?
8. Has anything unpredictable happened with external parties or forces and how often?
9. Were there external parties or forces that restricted the needed resources for the project?

Strong ties of the network

10. How many organizations participate in the network and how do they relate?
11. Do they all have the same goals within this project?
12. Was there equality amongst the partners with respect to size, power, trust, effort, cost and benefit?
13. How did the organizations in the network start to work together? Did the partners personally know each other before the project?
14. How is the atmosphere during the collaboration compared to your own organization?
15. Who, organization and person, was taking the leadership role? Did leadership change over time?
16. What kind of contractual and financial agreement do you have in this project?
17. Did any legal bodies or new organization rise as a result of the project?

Role of Information Technology in the network

18. How is the IT function organized in this project?
    a) Centralized vs. Decentralized?
    b) Degree of documentation, fixed procedures, etc. (formalization)?
19. Is the role of IT same for each partner?
20. How much do top managers and IT managers know about each other's priorities and details in the project?

Nature of the information system

21. How are the partners connected to each other with IT?
22. How important are the proposed IS for partners and your own organization? Does it give any (competitive) advantage?
23. How is the ownership of joint IS arranged?

Resources

24. Was the IT plan originated from policy or strategy?
25. How much experience and knowledge did partners have with planning inter-organizational information systems?
26. How much were:
    a) IT managers involved in the planning?
    b) User managers involved in the planning?
    c) Top managers involved in the planning?
27. How were funds and time assigned to the project in your organization and in the other partner organizations?
28. Did the organizations use any explicit guidelines for planning? Were consultants involved in the planning?

The planning process

Comprehensiveness

29. What types of separate and joint analyses were made before and during the planning phase?
30. How comprehensive was the resulting strategy document (in terms of number of pages, content i.e. issues addressed)?

Formalization

31. Were members formally appointed by each party to an inter-organizational planning committee?
32. What was the organizational status of the members of the planning?
33. What other arrangements were made to emphasize the formal status of the planning committee?

Focus

34. Did the planning committee searched for new joint initiatives on IT among the partners?
35. Did the planning process seek for means to standardize the use of IT by different parties?

Flow

36. Who made the decisions or decided what actions to undertake? How much did all parties influence these decisions?

Participation

37. How were representatives of each organization selected? How many representatives per organization?
38. How did the representatives of the participating organizations get together?

39. How did the representatives coordinate with their own organization?

Consistency

40. How many times did the participants meet?
41. Has the inter-organizational committee continued meetings?

Effectiveness of the planning process

Alignment

42. Did the planning lead to concrete plans or objectives in the network for using IT in the future?
43. Do you feel that the link between IT objectives and overall (business) objectives of the network is clear?

Analysis

44. Do you feel that the planning process improved different parties'
    a) understanding of inter-organizational processes?
    b) use of information?
    c) power bases?
    d) existing technologies?

Cooperation

45. How strong is the commitment to implementing the plan recommendations? Do you believe that the network strategy recommendations will be implemented?
46. Are there any penalties for not implementing the plan?

Improvement in Capabilities

47. Are you better off in preparing possible plans in the future?
48. How did the network affect / improve your own planning process?

Appendix B: concept-based matrices of case analysis

Table 4. Focal project dimensions

	VETUMA	IT PLAN
Focal project		
Duration	Originally, the expected duration was approximately 1 year. Due to increased complexity it took more than 2 years.	The project lasted 1 year and was exactly on schedule.
Goal	The aim was to create or buy an electronic identification and payment platform together, for reasons of (cost)-efficiency and standardization.	The aim was to cooperatively find out what joint services mean for IT in the metropolitan area.
Other projects	Several projects were going on, like a mobile phone working group and a library system. There were no IT projects before between municipalities and state government.	Cooperation between the three big cities in the metropolitan area goes back to the 70's. Some IOS that were made back then are still operational. Cooperation will intensify in the future.

Table 5. Network context dimensions

	VETUMA	IT PLAN
Weak ties		
Forces	Technology (different forms of identification, etc.), Law (on procurement) and Autonomy vs. willingness to cooperate.	Paras, merger of municipal ties, was one of reasons why the project was started.
Weak ties	Many weak ties: banks, national registration institute and mobile operators for the channels for identification, potential vendors for the ASP service, government agencies and municipalities that are willing to adopt vetuma, Katve consortium that already had a similar identification system, Hansel, the Finnish state government owned procurement office, Kunta Hieto (for the municipalities), state treasury. Some initially weak ties became part of the core network, like JUHTA, Information Society program and Valtt IT from the Ministry of Finance.	Only one weak tie was involved. Kunta IT, which had an advisory and knowledge base role in the project. This was more less an internal project.

	Agreement with weak ties	In general there was agreement. However, many weak ties you have to deal with, means many negotiations, discussions, bargaining, etc. This complexity slowed down the planning process. Potential municipalities had to be convinced of the necessity of YETUMA, as there is no way to coerce to use such a system.	Kunta 11 serves the same goals, but was informed about the differences between the metropolitan area and other parts of Finland, as the needs and problem differ immensely.
	Unpredictability	Most of the stakeholders mentioned the difficulties in procurement law as the most important unpredictable occurrence during the project. The EU procurement law requires a common procurement office on behalf of the municipalities and state agencies to allow multiple partners to make use of the service. Now, every municipality that wanted use had to send in a power of attorney, which took a long time.	No unpredictable events from external forces or parties.
	Resources or restrictions	Most weak ties provided resources for the project: Hansel (expertise), State treasury (taking care of contracts), Katve (documentation of their identification system), etc. On the other hand, procurement law initially restricted the municipalities to use Katve's readymade identification system.	There is pressure from the state government to work together, but no extra resources are given.
Strong ties			
	Number of organizations	The size of the strong connections in the network grew like a snowball: Vantaa and Espoo started, soon Helsinki and Kauniainen joined, then JUHTA (see Tommi Kaartavi) and the Information Society program joined. Later on, Valtori, the information management unit of the ministry of finance, became a dominant partner.	Four municipalities in the metropolitan area: Espoo, Helsinki, Kauniainen and Vantaa.
	Agreement strong ties	Although the perspectives of the parties differed, there were no conflicts and there was high agreement to make this solution	There were some disagreements in the goal phase of the planning process. However, technical fields, like IS, stay, according to the stakeholders, a neutral and rather difficult topic to understand.

	Equality among network partners	Some players were bigger than others, like Helsinki is much bigger than Kauniainen, but the distribution of power was related to the effort made by the persons themselves. Most parties benefited from the VETUMA system, but some on short term, like bigger partners that already have services that need strong identification and payment, and smaller parties that will use the service in the future.	The smaller the municipality, the more important the need for cooperation, as joint resources can enable services. Furthermore, the more effort, the more decision power in the team.
	Initiation	Bottom-up. In 2004 it started out as a cooperation between some municipalities in the region of the Helsinki, mainly Vantaa and Espoo first and then Helsinki and Kauniainen joined later and at this point when JUHTA became involved and now our ministry of interior, we thought it should be nationwide.	Top down. The top management of the four metropolitan area cities decided in 2005 to closely work together on services. After setting a strategy, fourteen functions started to make plans in the functional area in 2006. The IT department was one of them. The IT directors, two secretaries and functional IT managers formed a planning team.
	Existing relationships	Most of the stakeholders new each other quite well before the cooperation, especially the members from the metropolitan municipalities.	Team members worked a lot together, so they knew each other very good.
	Atmosphere	Good, informal, constructive	Good
	Leadership	Formally, there were two leaders in the project: the chair in the project group from Vantaa and the chair in the steering group from Helsinki. Informal, the member of the information society program played a leadership role.	Although Helsinki is the biggest player, Espoo was democratically chosen by the network council as the chair in the planning team.
	Contractual agreements	None in the planning phase, later on for the procurement process.	None
	New legal bodies	Not direct, indirect there will be a joint procurement office for municipalities	Yes, metropolitan area coordination group for information systems. The members of which would be the it directors of the CIO's of the four cities.
Role of IT			
	Centralization	The I needed for the project was mostly distributed among the network partners, so decentralized, but in the production phase it became more centralized in the ministry of finance and the vendor.	Decentralized among the four network partners, but it is agreed in the plan that it will be centralized among the joint services.
	Formalization	Informal in the beginning phase (It was more like if any kind of procedure were needed, there was decided after the need arose) and more formal when specialists from the ministries and vendor came.	It was quite formalized: every city got their "homework" to do.

	Role of IT	Yes	yes IT was quite the same. every city has an IT strategy and we see the goal of IT quite similar)
	Knowledge overlap	As some members of the project group were member of the steering group, most members of the steering group knew about the technical side of the project and the more technical people in the project group knew more about the network goals.	The strategy from the majors was a direct input in the process, so the IT directors knew about the high level goals. The majors on the other hand knew less about the technical details and just approved the plan.
Nature of IOS			
	Partners connected	The VETUMA infrastructure is a "pooled" IOS system, shared by many applications among multiple organizations, which can be a potential reason for the high level of agreement in the cooperation.	Most information systems are not integrated yet. Some information systems, like the library information systems already shared a common database.
	Importance of IOS	High importance on an operational level as this will be the infrastructure for eServices that need identification of citizens. "VETUMA services are rather a must than a competitive advantage. Of course without this kind of services you cannot offer certain types of eServices".	The IOS that has to be integrated in the future are on vital municipal functions, like healthcare and education, so of major importance. The current and planned dedicated IOS are less important.
	Ownership	Shifted from a distribution among the municipalities. based on a inhabitants ratio, to the ministry of finance.	Ownership is distributed among the cities. Now it is not an issue, but in the future there will be discussion about ownership of IOS.
Resources			
	Originated from strategy / policy	No. Although there already was a lot of cooperation on different levels in the metropolitan area, two project managers from the cities of Vantaa and Espoo came spontaneously with the idea for VETUMA. Later on, the information society program adopted the VETUMA project in their own strategy.	yes. Under pressure of government policy plans, the majors of the metropolitan area decided to start working closer together on services in several areas. This top management strategy and strategic plans from functional area's were direct input to the IT planning team.
	Prior experience and knowledge	Differed. Some stakeholder in the planning process had a lot of experience and knowledge with IOSISP, but some did not. Nobody had experience with IOSISP that includes the state government.	Yes. Most stakeholders had experience and knowledge of IOSISP. However this was the first time that a more institutionalized approach, instead of project approach, was chosen.
	IT management	CIO's, IT project managers and analysts were highly involved	IT directors and functional IT managers were highly involved, but only 1 more technical IT professional was directly involved in the planning committee
	User managers	Not involved, because the IT managers found that the user managers would not be in straight contact with the system.	Highly involved before the planning process (functional strategies were input) and during the planning process (workshops with functional departments were held).

Top managers	Little bit involved. Only on IT directors level from the municipalities, but high managers from state government. Top managers were not interested in VETUMA, because it is an operational infrastructure.	Fairly involved. The IT planning group had to report two times to majors and metropolitan council.
Funds	Initially money came from the starting municipalities, but soon most funds came from the information society program and the ministry of finance. The ministry of finance information management unit, Valtiol, pays the start-up costs for the first two years of the project.	There were hardly any funds needed for the project.
Human resources	Naturally, most human resources came from the organizing partners. Most of them did not get any extra time in their job for the VETUMA project. Additional human resources came from weak ties, like the government owned procurement office and the state treasury.	The planning committee was part of their job, there was no extra time dedicated. "it is quite hard, for example I was in a big competition at the same time and I was in that project also in the beginning. "
Methods	No planning methods except project management was used.	No explicit planning methods were used.
Consultants	Until the production phase, no consultants were used.	No consultants were involved.

Table 6. Process dimensions

	VETUMA	IT Plan
Process		
Comprehensiveness	**Low in the beginning, Medium in the end**	**Medium**
Analysis	Opinions differed among stakeholder groups about how many analyses were made. IT project managers perceived the number of analyses as less than the top managers and IT directors. The state government and vendor brought more analyses with them.	Mostly high level analyses were made to inventarize the current systems and resources, formulating goals and strategy on future status and identifying projects.
Report	Initially, it was quite thin and incomprehensive (about 10-15 pages), but gradually it became more comprehensive for the procurement process (50 pages) due to expertise from the state government and vendor.	Pretty comprehensive (30 pages). However, the information plan was on a high strategic level and did not contain details.
Formalization	**Low**	**High**
Appointment of members	The project started informal and bottom-up. There was not a formal appointment process. "I think that every party	The members were formally appointed by the metropolitan area council. The distribution of

		gave their names...".	chairs was a forma. political process.
	Organizational status of members	The planning team had no formal status in the organizations. It was seen as a project group.	The planning team was an official appointed committee.
	Other arrangements	No.	Several. A regional IT board was started and the city council could comment on the plans.
Focus		**Control**	**Control**
	New joint initiatives on IT	No. There was no search for creativity or innovation.	No. "we just identify just the items we had to work on in the future. We didn't try to invent anything especially new on the strategies or the strategic goals or something"
	Standardization	Yes. Interoperability and standardization were main goals in the project.	Yes. "and to unify and made these systems which are in place already talk with each other, or maybe think about common systems in the future."
Flow		**For most decisions bottom up**	**Top down**
	Decisions	Technical decisions were made in the project group. business decisions were made in the steering group and financial or juridical decisions, like the power of attorney, were made on organizational level. Decisions in the project were based on consensus.	The planning team made a proposal which was approved by the city council and the majors.
Participation		**Broad perspective**	**Broad perspective**
	Representatives	The network partners chose their representatives themselves. 1 or 2 representatives per organization: one technical and one strategic / professional. The planning team and its configuration was quite flexible.	Representatives were selected on a formal base. Two representatives per organization, mostly one IT director and one IT user manager.
	Get together	Meetings and communication were highly distributed among different channels and places.	Meetings and communication were highly distributed among different channels and places.
	Coordination with own organization	For formal or juridical decisions organizations had to coordinate with their own organizations, sometimes going deep in the bureaucracy. The network partners discussed a lot with their own organization, but did not need formal approval all the time.	Most network partners received strict guidelines from top management for the discussions. Partners involved their own organization, both user and top management quite a lot.
Consistency		**Medium to High**	**High**
	How many times met?	The project group met almost once a week, varying from several times a week till a few times a month. The steering group met about 12 times.	In one year time, the planning commitee met about 15 times.
	Continued meetings	Yes, a follow-up group is formed to monitor the	Yes, an official regional IT board is formed.

	implementation.

Table 7. Effectiveness dimensions

		VETUMA	IT Plan
Effectiveness			
Alginment		**Low to medium**	**Medium**
	Concrete new plans	A few new plans, which were mostly linked to the VETUMA system itself.	A few small IS, like an Groupware, but not significant
	Link IT - Business	Not really a clear link. The IT goals in the end did partly fit the business goals, as most municipa ities that were interested do not have the services yet.	Yes, the business strategy was a direct input to the IT strategy plan. However, the link is not a detailed level, as it stays on high level.
Analysis		**Medium to High**	**High**
	What is learned?	On personal level, stakeholders learned a lot about cooperation (especially between state government and municipalities), procurement law, techno ogy and how to approach planning together. However, how much the organization itself has learned depends on knowledge transfer.	Stakeholders learned a lot about each other's IT organizations and about collaboration. "Well, personally to me it was very, it was a good learning process, mainly I learned a lot about these other cities, how they have organized their IT"
Cooperation		**High**	**Low to medium**
	Commitment to implement	There is a strong commitment to implement the VETUMA system. More then 60 organizations jo ned the project and about 20 organizations are actualy using VETUMA.	The IT strategy is not detailed, so commitment depends on further discussion how to implement the strategy.
	Penalties	No penalties, because Finnish municipalities are still very independent. The ministry of finance enhances implementation by financing the start-up costs for the first 2 years of VETUMA.	There are no formal penalties, but the politicians approved the strategy. municipalties and their departments are stimulated.
Improvement in Capabilities		**Medium**	**High**
	Better off in future	Yes, VETUMA was an useful experience, especially as it was the first time that state government and municipalities worked together on IT. The experiences in planning VETUMA are useful for further cooperation.	Yes, the project will be evaluated and most organizations, knew better how to come up with a common IT strategy.
	Improve / affect own planning	Not much, as for most stakeholders it stays a project. The VETUMA system itself is very helpful for planning eServices.	Yes, the cooperation and especially the exchange of each other's IT strategy and best practices gave insight for the organization's own planning process.

Appendix C: conference paper ECIME

Contextual factors influencing Strategic Information Systems Planning in a network: Evaluation of two inter-municipality projects in Finland

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Abstract: Public services are increasingly transcending organizational borders. Yet, Strategic Information Systems Planning (SISP) is mostly studied within organizations. Recently, however, preliminary attempts are made to study SISP on a network level. As the network studies up to now focus on the planning process and its outcome, we choose to study contextual factors that give input to the process and effectiveness of networked SISP.

We aim to explore - by means of in-depth semi-structured interviews - how different contexts may lead to different SISP approaches among inter-organizational networks. By analyzing the transcriptions of our audio taped interviews we derive the factors that influence SISP in a network. As there is almost no previous research on contextual factors of IS planning in networks, SISP literature has been systematically reviewed to derive SISP factors on the organizational level. This literature review was then combined with seminal work in the field of network literature. From these literatures we derive four major contextual factors that influence SISP in a network: 1) the external environment, 2) the (inter)-organizational context, 3) the nature of the planned IS and 4) resources committed to the SISP process.

Two cases were conducted in Helsinki's metropolitan area to empirically explore the factors found in the systematic literature review. The first case regarded the planning of an online identification and payment system that supports the public services of municipalities. The formulation of an inter-organizational IS plan in the capital area served as a second case study. Key stakeholders in the planning process of both networks were interviewed to evaluate the context, process and the effectiveness .These cases illustrate the importance of the context of the planning process and explain how a governmental context influences the way SISP is executed in networks. Pressure from national policy for merging municipalities, increasing importance of inter-organizational IS in the light of e-government and pre-existing inter-organizational structure are major factors that came forward in the cases.

Both researchers and practitioners in the field of inter-agency collaboration, particularly SISP, should take contextual factors, such as the complexity of the internal or external environment or the nature of the IOS, in account.

Keywords: Strategic Information Systems Planning, networks, inter-organizational Information Systems, inter-municipality cooperation, e-government

1. Introduction

"While Finland is an e-government pioneer, it continues to face a number of crucial e-government challenges...". The OECD (2003) published a report on the current state of e-government in Finland and despite Finland's effort it faces some difficulties in implementing its central e-government policy. One of those challenges is the coordination of the collaboration between governmental bodies on e-government projects. Finland is not the only country which faces these challenges (Ernst&Young 2007).

As our society shifts to a network society (Castells 2000), worldwide an increasing number of agencies are collaborating on e-government projects for several reasons, such as the economical, political and knowledge position of an organization (Mulder and Spil 2007). Part of those projects is

the planning of a portfolio of Inter-organizational systems that helps to achieve the common goals of the network, which is referred to as Inter-Organizational Strategic Information System Planning (IOSISP) (Spil and Salmela 2007). However, research on IOSISP is still limited and most research on SISP so far has discussed the planning of information systems in a single organization and governance issues of Inter-Organizational systems (IOS) and networks. Like SISP, networks seem to vary in the way they approach IOSISP (Finnegan et al. 2003). This paper aims to study the reasons why the process and effectiveness of IOSISP differ among networks.

Although IOSISP seems to be a new phenomenon, it is not necessary to start from scratch. This paper uses a general input-process-output model shown in figure 1, based on King (1988), Lederer & Salmela (1996) and Brown (2004), as a starting point. As the boundaries between organizations are getting more permeable and vague in the context of networks (Alexander 1992), a network can be seen as a type of single organization, albeit more distributed and loosely coupled than the traditional hierarchical boundaries (Finnegan et al. 1999). Therefore, it can be argued that networked SISP can be framed in such a model. Previous research on networked SISP placed the emphasis on the process and effectiveness and formulated factors to evaluate the process and effectiveness (Spil and Salmela 2007). However, contextual factors from the internal and external environment should fit the planning process in order to conduct IOSISP effectively (Teo and King 1997). We are interested in why planning approaches differ among networks and therefore a contingency model is necessary.

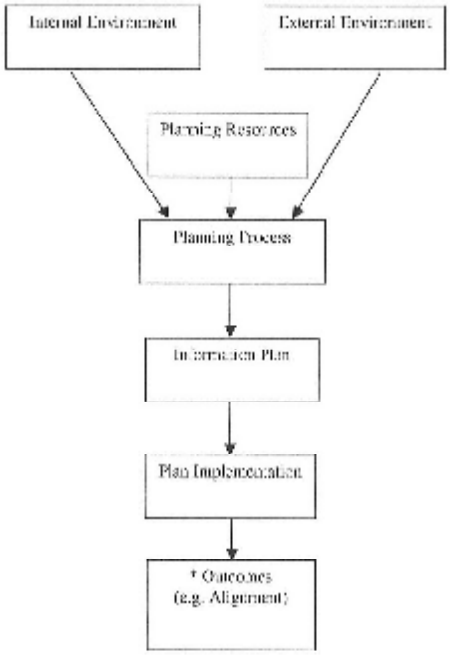

Figure 1: SISP input-process-output model

Consequently, this paper's research question is: "What are the contextual factors and what is their influence on the process and effectiveness of IOSISP?". The answer to this question will be derived both theoretically by the literature review of the next section and empirically by the two case studies conducted in Finland.

2. Literature review

A systematic literature review on contextual factors of (IO)SISP was conducted. All relevant articles from IS journals were searched and analysed in a concept-based framework. This resulted in an high-level research framework shown in figure 2, which is an simplified version of the SISP input-output-process model. The planning process and the effectiveness of IOSISP are influenced by factors from the external environment, internal environment, the nature of planned IOS and resources. Next, we will elaborate on the relevant contextual (sub) factors.

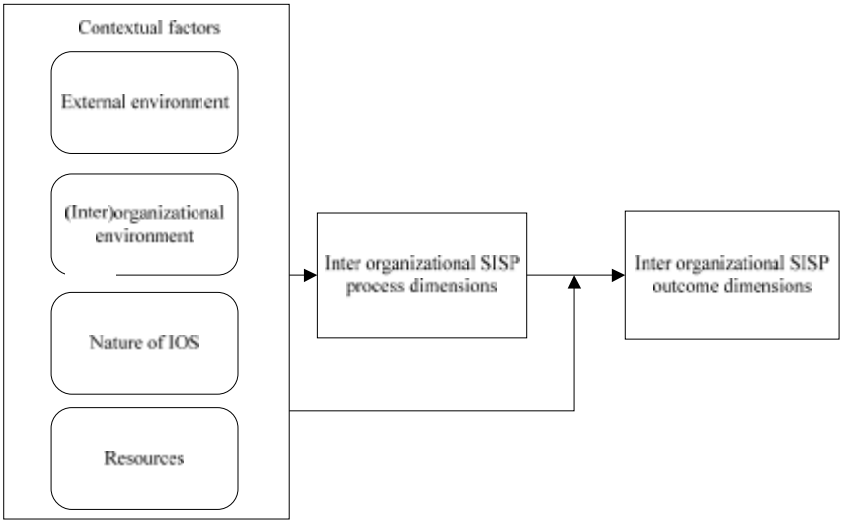

Figure 2: Research framework of IOSISP context

2.1 External environment
The external environment of an organization is seen as an input in the SISP process (Brown 2004; Lederer and Salmela 1996) and influences the process and effectiveness. We found the following sub factors:

Type of industry
The information intensity of an industry could have an impact on the SISP process (Premkumar and King 1991) as the resources can differ among industries. The industry type does not seem to influence the effectiveness of the SISP process (Premkumar et al. 1994b).

Heterogeneity
Heterogeneity refers to the number and diversity of external factors in an organization's external environment (Sabherwal and King 1995). Differentiation in stakeholders during planning makes it harder to get consensus (Byrd et al. 1995). The inclusion of external stakeholders with conflicting interests can be expected to influence the coherence and timeliness of planning (Holley et al. 2004). Heterogeneity increases the complexity of this process, as all external stakeholders need to be taken in account and so SISP tends to be more comprehensive and the level of analysis within the SISP process increases (Sabherwal & King, 1995) .

Dynamism
Environmental dynamism refers to the unpredictability and rate of change in the external environment (Sabherwal and King 1995). The implications of dynamism for SISP process is two sided: organizations need to adapt swiftly in a dynamic environment (Pyburn 1983). Conversely, organizations need analysis to keep track with uncertainty (Salmela et al. 2000). In practice, most managers are reluctant to decide quickly (Sabherwal and King 1995). How to deal with uncertainty changes when an organization evolves: under conditions of increasing dynamism, organizational mechanisms are used by organizations to control and stabilize their relationship with the external environment (Grover and Segars 2005).

Hostility
Hostility represents the thread of environmental elements that restrict resources (Sabherwal & King, 1992). Market pressure as an influence on IOSISP process, resulting in more hierarchy (Mulder and Spil 2007). Hostility is associated with politics, in which SISP is seen as a bargaining and negotiation process. Government agencies face more hostility (Bajjaly 1998), which characterize the process with low levels of formalization, comprehensiveness, consistency and participation (Segars and Grover 1999).

2.2 (Inter)organizational environment
IO SISP varies according to different organizational circumstances (Wang and Tai 2003). These circumstances can be divided in the following sub factors:

(Inter)organizational structure and governance
The planning of inter-organizational systems is usually embedded in a network. There are three types of networks based on coordination mechanisms (Salmela and Spil 2006):

- Relational networks, based on trust
- Hierarchical networks, based on authority
- Contractual networks, based on agreements

As figure 3 shows, the different networks and their coordination mechanisms are related to their planning approach: markets lack planning and are coordinated by transactions and contractual agreements, hierarchical networks use formal planning (Alexander 1992), and relational networks coordinate and plan informally (Spil and Salmela 2007).

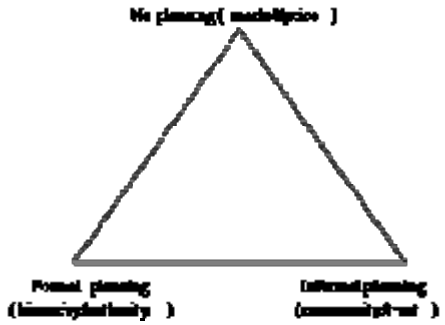

Figure 3: Relation network coordination mechanism and planning

The degree of planning is reflected in a network's governance structure, as there are three possibilities of governance in a network (Provan et al. 2007):

- Shared governance: no unique, formal governance structure other than through the collaborative interactions among members themselves, which can cause unsophisticated planning (Huxham 1993).
- Network administrative organization is an overarching authority that supports the leadership in a network, which creates an hierarchy mechanism and therefore more formal planning.
- Lead-organization: there is a more powerful organization in the network that has sufficient resources and legitimacy to play a lead role. A dominant partner causes hierarchy, which increases the comprehensiveness of planning (Finnegan et al. 2003).

(Inter)organizational size
Large and complex companies tend to follow more systematic and formalized strategic IS planning practices (Pyburn 1983). Firm size does not seem to influence SISP effectiveness (Premkumar and King 1994). The size of network is an antecedent for network mechanism and planning. An higher number of partners in a network is likely to lower the decision making authority and autonomy and therefore there is less hierarchy when nothing is arranged to structure the network. A network of many organization of the same sector need more hierarchy to keep track of all parties and activities in the network (Astley 1984).

Organizational culture
Organizations with a formal culture are more likely to have a comprehensive SISP process (Earl 1993). Culture has an influence on decision making approaches in organizations, formalization and reward of innovation, which in their turn influence the SISP process (Guimares and McKeen 1989).

The role of the IS function
Centrality of IT the function has a negative influence on shared domain knowledge and results in less improvement in planning capabilities (Wang and Tai 2003). A lack of shared domain knowledge between IT and business managers decreases the rationality and comprehensiveness of the SISP process (Sambamurthy et al. 1993). Decentralization can boost the differentiation in internal stakeholders, which makes it harder to get consensus (Byrd et al. 1995). Formalization of the IT unit is positively related with rationality of the SISP process (Sabherwal and King 1995). The more the IT function is integrated with the business function, the more the SISP process becomes sophisticated (Sabherwal 1999).

2.3 Nature of the IOS
A major factor that influences the SISP process is the strategic importance of IS in general for an organization and IS in specific. The strategic grid model is used to categorize planning approaches (Jiang and Klein 1999). Organizations that plan IS with a high strategic impact commit more resources to planning, have a long-term planning horizon, and perform quality planning, otherwise SISP tends to be more short-term and tactical. High strategic impact means higher levels of IS business integration and top management and user involvement (Premkumar and King 1992). It also raises acceptance of SISP in the organization, enables resources, increases the perceived usefulness of SISP and increases the support from top management for SISP. The relatively higher complexity of IOS compared to intra-organizational systems urges the need for IOS planning (Finnegan et al. 1999). There is a relation between the network structure and the nature of IOS, denoting the structurability, coordination mechanism and conflict in coordination of the IOS (Kumar and Van Dissel 1996). IOS planning is more fluid than IS, resulting in little planning (Sabherwal and King 1995). Ownership is also important: the more partners in a network mutually own the IS, the more hierarchic the coordination and planning (Provan 1984).

2.4 Resources
King (1988) mentions three kinds of inputs of the SISP process: informational inputs, non-informational inputs and SISP planning goals.

Informational resources
Business goals and plans are important inputs for the process as they determine the horizon and the effectiveness of SISP. BSP-SISP integration increases SISP sophistication, because it enables opportunities for IS to add strategic value (Sabherwal 1999). Top managers and users become more committed to SISP in case of an high integration (King and Teo 1997). IS mission and vision are important informational inputs too and the quality of informational inputs has an influence on the perceived quality and effectiveness of SISP (Premkumar and King 1994). Experience and knowledge of SISP increases the comprehensiveness (Grover and Segars 2005).

Non-informational resources
User, IT and top management commitment are very important for the quality and effectiveness of SISP (Basu et al. 2002). A lack of financial resources decreases the comprehensiveness and adaptability of the SISP process (Segars and Grover 1999). Methods, often chosen by consultants, enhances comprehensiveness, but can be too rigid (Earl 1993). Trust between stakeholders in the planning process is important: low relational certainty among network partners favour hierarchical or contractual control mechanisms. If partners in a network have worked more often together, the number of formal agreements in a network will diminish. Non-informational resources positively influences the quality and effectiveness of SISP (Premkumar and King 1994).

(IO)SISP planning goals
The reasons for conducting SISP also influence its process (King 1988). Organizations make a trade-off between implementation speed and fit with the organizational goals. The choice depends on what the organization values most. Networks with disparate partners need leadership and comprehensive planning to harmonize (Volkoff et al. 1999).

3. Methods
In order to empirically substantiate the contextual sub factors, a semi-structured interview model was developed. Mulder & Spil (2007)'s interview model on process and effectiveness complemented the

interview. Two pilot interviews were used to test and tune the interview on duration, comprehensibility, reliability.

Two experts were interviewed to obtain background information on inter-municipality projects and to indentify and select two projects that differed in planning approach and fitted in the definition of IOSISP The first case was a project based case, VETUMA, in which four municipalities and two ministries planned an online identification and payment infrastructure between 2004 and 2006. The second case was more comprehensive: the same municipalities formulated an IT strategy for the metropolitan area in 2006. By using snowballing and theoretical sampling (Ruohonen 1991) most stakeholders in both projects were selected. Participants worked in different organizational layers: from CIO's to analysts. Some participants were involved in both projects and therefore they were interviewed about both cases in the same interview.

A total number of 13 interviews were conducted with 16 stakeholders in a time period of two months. One interview was conducted in the form of a group interview, in which the CIO and project manager of the same municipality were complementing each other in the interview. The interviews took place at the interviewee's office and took approximately 1.5 hour. Apart from interviews, project documents were collected.

A conceptually clustered matrix was used to analyse both cases (Miles and Huberman 1994) ,in which the factors and interviewees were listed and analysed on differences and similarities. Subsequently, a cross-case analysis was conducted to indentify differences and similarities.

4. Case studies: two inter-municipality projects in Finland

4.1 VETUMA project

The VETUMA project started in the beginning of 2004. Two project managers from the municipalities of Espoo and Vantaa recognized that they needed an online identification and payment infrastructure. Soon, the cities of Helsinki and Kauniainen joined. As more actors in the public sector could benefit, the project contacted JUHTA, a public administration recommendation council, and the Information society programme. Both parties entered the project to guarantee nationwide diffusion of the infrastructure. Reasons for the cooperation were mostly operational: efficiency, available to all municipalities and interoperability. The founding members expected the planning phase to be one year, but eventually the planning lasted for three years. Currently, many governmental agencies use the VETUMA service.

External environment
After the decision to use VETUMA as a nationwide infrastructure, the planning committee had to deal with a myriad of external stakeholders: different vendors, banks and institutions that provided the channels for identification and payment and many interested parties considering to adopt the infrastructure after implementation. This increase in external stakeholders boosted complexity; a more comprehensive planning approach was needed. The high heterogeneity of external stakeholders was a reason for delay. Dynamism and hostility did not seem to play a large role: the only restricting factor was procurement law, which required a municipality owned procurement office before it could be used by all interested municipalities. Several state bodies provided resources like jurists, procurement expertise and technical documentation from similar projects.

Inter-organizational environment
The planning organization consisted of two groups: the leading group included CIO's and the project group included IT managers, project managers and analysts. The initiator from Vantaa took the lead in the project group and the CIO of Helsinki was chair in the leading group. Some overlap between both groups assured that top IT and technical management were kept up-to-date about each other. At the start the network was based on shared governance, but after ValtIT, the IT governance unit of Finland's ministry of finance, was willing to provide resources to the project, the governance structure mildly changed towards a lead organization structure. The size of the network also changed during the planning phase, from two municipalities to a group of eight organizations, which delayed the planning. So, the complexity of the planning organization obviously influenced the planning horizon and urged the need for comprehensiveness. Differences in size between the organizations did not

influence the power in discussions, but determined by the person's interest and effort. Most members in the project organization knew each other, which resulted in an informal atmosphere. However, the bureaucratic organizational culture of government agencies impeded the process. The IT organization needed for the VETUMA project was first decentralized and informally arranged. Later it was centralized in the vendor and ValtIT. As there was no common IT unit in the network, project members had to coordinate with their own organization.

Nature of planned IOS
The VETUMA service is important for government agencies, as it enables them to provide services that need strong identification and payment. However, VETUMA is an infrastructure and in this sense operational: "rather a must than a strategic advantage". This operational and technical nature and the common need among all parties made the VETUMA a political neutral issue to collaborate on. The VETUMA service is an ASP that connects citizens via multiple channels, like e-banking and mobile phones, to e-services. The VETUMA infrastructure is a "pooled" IOS system, shared by many applications among multiple organizations, which can be a potential reason for the high level of agreement in the cooperation (Kumar and Van Dissel 1996). Initially the ownership and coordination of the system was distributed among the municipalities, but when the central government entered the project it became centralized in ValtIT. VETUMA was developed by a vendor, which increased the influence of methods in the planning process.

Resources
There was no strategy as a direct input to the planning process. Nevertheless, the VETUMA project suited perfectly in the central government's policy to stimulate eGovernment and therefore was adopted in the Information society program that assured alignment between IT and business goals. The information society program helped to seek for central funding of the project, because it was well aligned with their goals. The VETUMA project did not need a lot of financial or human resources at the start: the municipalities assigned no extra funds for the planning and most planners worked on a voluntary base. Later, the central government provided resources, like start up costs, IT specialists and jurists, which increased comprehensiveness. The central government arranged an high level of top management support, even on prime-minister level. IT managers and professionals were also highly committed as they were in the project organization, but no user managers were involved. The VETUMA project was unique, because municipalities and the central government have never collaborated together on IT before. Therefore, there was no specific previous experience as an input to the planning process, which could co-explain the incremental planning approach. Apart from project management, methods solely from the vendor where used after the planning phase.

4.2 Metropolitan area IT strategy project

The development of an IT strategy for Helsinki's metropolitan area started in 2006. A few years before the city majors were stimulated by the central government to discuss cooperation. They agreed on a strategy describing services that could be done together. All functional departments, including the IT department, were asked to make joint strategies and therefore the IT directors and some functional IT manager formed a planning committee. Based on the general strategy and the plans of the functional departments, they investigated the impact on the IT function and set high-level goals on common e-services. Within the schedule of one year, the committee delivered a plan approved by the metropolitan area council and majors.

External environment
External stakeholders played only a minor role in the development of the IT strategy. Only the local governmental IT management unit was involved for knowledge transfer. However, governmental policy influenced the start of this project: to encouraged municipalities to merge, the central government put pressure on the metropolitan area to intensify cooperation. This pressure made the project very top-down. Indirectly, privacy and security law impeded collaboration, but on the other hand law forced healthcare agencies to integrate their IS.

Inter-organizational environment
In the metropolitan area project, the planning group was more a committee than a project group. It consisted of 4 IT directors, 2 secretaries and 1 functional IT manager. The majors formed a steering group to which the planning committee reported. the metropolitan area the planning committee was

clearly embedded in a super-organizational body led by a network administration organization. This network structure seemed to make the planning very comprehensive. The size of the network was small and did not change over time, but within the organizations there were many stakeholders: 13 functional groups, the council and the majors. Most partners were acquainted with each other, which eased planning and resulted in an informal atmosphere. The IT function within and between the parties was decentralized and formalized: the IT directors had discussions and workshops with the joint functional departments and with functional IT managers in their own organization. Several analyses were made by the IT functions to substantiate the strategy. The planning committee continued as a formal IT director's forum after the project, aiming at alignment of each other's IT strategy. This is a further step to comprehensive and formal planning.

Nature of planned IOS
The future common services, like on education or healthcare, are of high strategic importance, as they are directly connected to the citizens. IOS can improve services, as citizens can use them independent of their city. This high importance can be an explanation for the initiation and high top management support. However, most information systems are not integrated yet. Some information systems, like the library information systems already shared a common database. The ownership was highly decentralized, but can change in the future when the municipalities will integrate or eventually merge.

Resources: A clear business strategy was an input for the IT strategy, which made it easy for the municipalities to align their network and IT goals. The general and functional strategic goals were translated by the planning committee into IT strategy implications and goals. Like VETUMA this project was unique: no network of municipalities made such a joint IT strategy before. On the other hand, the planning process was quite straight-forward and did not differ a lot from SISP. Therefore, they could use their experience and knowledge. No technical IT professionals were involved in the formulation of the strategy, because the technical implications will be discussed in more detail after this project. Manpower and funds were distributed among the parties. The formal status of the planning committee guaranteed that the formulation of the IT strategy was part of their job. No explicit guidelines or methods were used in the planning phase.

5. Discussion: cross-case analysis

The cases showed that heterogeneity in the external environment determines the comprehensiveness and time horizon of the planning, because interacting with multiple, disparate external stakeholders slows down the process. The lower complexity in the Metropolitan area case made the planning much faster than the VETUMA case, which needed more comprehensiveness to keep up with all players. The external environment can enhance IOSISP, like the provision of resources by governmental bodies in the VETUMA project and the pressure from the central government on municipalities to merge in the metropolitan area project. In opposition, external forces like privacy or procurement law can discourage cooperation.

The cases also show that IOSISP is highly embedded in an inter-organizational setting, which has an high impact on how it is initiated, who is committed to the planning process and how it is approached. In the VETUMA case the fairly emergent project organization was a result of a bottom-up initiation, in contrast to the Metropolitan area IT strategy project that had a clear top-down start. The differences in governance structure of both networks, lead organization versus network administration organization, can explain differences in comprehensiveness.

The nature of the planned IOS can play a role as well: the more important the IOS, the more likely that top management is involved. In both cases there was a high top management support, as both projects were strategic or enabled strategic information systems for the future, like in the case of VETUMA.

Resources had more direct impact. The metropolitan area case had a business strategy as a direct input, which made the planning top down and formal than the "spontaneous" VETUMA case. Previous relation, experience and knowledge positively IOSISP in both cases. Non-informational inputs in both cases were mostly related to external and internal environment, such as the governance structure

In sum, most differences in planning between both case studies can be explained by contextual factors. Both theory and practice show that contextual factors have a profound influence on IOSISP.

6. Conclusions

This paper contributes on practical and theoretical level. Practically, this paper gives practitioners insight on how the planning within their network is affected. It makes them aware of the importance of the fit between planning process and the context IO SISP. For example, a rigid inter-organizational structure would not fit with a very emergent planning approach. We recommend to analyse the external environment of the project and the nature of the IOS and take these findings in account in inter-organizational and planning design. The cases demonstrate that policy from the central government, the number of stakeholders in and outside the network, the increasing importance of joint e-services and pre-existing network governance are practical issues.

The theoretical contribution of this paper are the contextual (sub) factors derived from literature and empirically substantiated: external environment, inter-organizational environment, nature of IOS and resources. More research on the contingency of IOSISP is needed to develop a normative model that could guide organizations in their planning. The contextual factors in this paper would be a starting point for such research. Furthermore, it seems that networks are not static in nature, but evolve over time due to contextual factors. Therefore, it would be interesting to follow IOSISP over the lifecycle of a network.

Nevertheless, this paper has some limitation. The external validity of both case studies can be subject of discussion as it regards only two cases. Overlap in organizations can cause a bias, because it would be possible that the VETUMA project had some learning effect on the metropolitan area project. On the other hand, the keeping the participants in the cases the same increases the validity as those conditions are kept stable, which makes it easier to make controlled deductions.

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Appendix D: conference paper ICIS

HOW STRONG AND WEAK NETWORK TIES INFLUENCE NETWORKED STRATEGIC INFORMATION SYSTEMS PLANNING: TWO CASES FROM HELSINKI'S METROPOLITAN AREA

Abstract

So far, little is known in Information Systems research about how networks affect Strategic Information Systems planning (SISP), although more and more organizations plan their IT across organizational boundaries. This paper aims to explore how different network contexts – both strong and weak network ties - may lead to different SISP approaches and success. Both SISP and network literature has been reviewed for network characteristics to develop an initial research model. By conducting two case studies in Finland's metropolitan area these factors were empirically explored. The first case regarded the planning of an online identification and payment system that supports the public services of municipalities. The formulation of an inter-organizational IS plan in the capital area served as a second case study. We found that the configuration of strong and weak ties in a network highly affects the planning process and its effectiveness.

Keywords: Strategic Information Systems Planning, networks, inter-organizational Information Systems, inter-municipality cooperation, e-government

Importance of networked SISP

"While Finland is an e-government pioneer, it continues to face a number of crucial e-government challenges." OECD (2003). One of those major challenges is coordinating collaboration between governmental bodies on e-government projects. Finland is not the only country which faces these challenges (ErnstandYoung 2007; Van Dijk 2007). As our society shifts to a network society (Castells 2000), worldwide an increasing number of agencies are collaborating on e-government. Part of these projects is the planning of a portfolio of Inter-organizational systems that helps to achieve the common goals of the network. This is usually labeled as Inter-Organizational Strategic Information System Planning (IOSISP) (Spil et al. 2007) or networked SISP. However, research on IOSISP is limited as 1) most research on SISP so far has discussed the planning of information systems in a single organization, and 2) most research on Inter-Organizational systems (IOS) and networks did not focus on the strategic planning of IS. However, according to Finnegan et al. (2003) networks of organizations also seem to vary in the way they approach SISP- just as with SISP in single organizations.

The governance of networks demands a different approach than is common for the traditional hierarchical and centralized top-down steering (Kickert et al. 1997). Brown (1987) points out that members of a network: 1) are included because of their interest in, or their ability to contribute to constructive action; 2) are loosely coupled and participate in a system voluntary; and 3) are revolving activities and decision around a broad vision and a set of general goals that incorporate the interest of the individual organizations. According to Chrisholm (1998) this results in an organization without superior-subordinate relations, or more precisely a network has less hierarchy and therefore gives more flexibility and

autonomy to its constituents (Ching et al. 1996). Control is a responsibility of all partners and as Kanter (1994) and Doz (1988) state, a network requires a dense web of interpersonal connections. Usually, social mechanisms like sanctions and reputation are used to solve or prevent exchange problems within a network (Jones et al. 1997).

A distinct feature of networks is that the boundaries between what is internal and external to the organization becomes permeable and less obvious (Alexander, 1992; Cross et al, 2002). In this sense, the traditional dichotomous distinction between internal and external environment does not hold water. . To clarify which inter-organizational context we research, we distinguish between inner and outer networks, i.e. the inner network consists of the core group of organizations participating in networked SISP. The organizations in the core group have strong ties with each other, while the organizations in the wider environment of the network have weak ties with one or more of the core group members. We make this important distinction based on Granovetter (1973), who also argues that a network's weak ties provide most opportunities and give the strongest impetus for innovation. The configuration of a network and its ties can differ and change by several network dimensions, such as density, hierarchy, centralization, and the like (Kenis et al. 2002; Provan et al. 2007). These dimensions show that the network context is important in understanding how networked SISP is approached by government organizations.

Although the literature on networked SISP is scarce, we do not need to start from scratch. As the boundaries between organizations are getting more permeable and vague in the context of networks (Alexander 1992), a network can be seen as a specific variant of an organization, albeit more distributed and loosely coupled than within the traditional hierarchical boundaries (Finnegan et al. 1999). Hence, an initial conceptual framework for networked SISP can be rooted in such a model. We base this paper on a general input-process-output model first developed by King (1988). Specifically, we use the King-based SISP input-process-output model by Lederer and Salmela (1996) as modified by Brown (2004). Brown´s SISP model identifies 5 steps: planning resources, planning process, information plan, plan implementation, and outcomes (e.g. alignment). In this model the internal and external environment influence the planning process. Previous research on networked SISP placed the emphasis on the process and effectiveness and formulated factors to evaluate the process and effectiveness (Spil et al. 2007). However, characteristics of the network - both of its strong and weak network ties - should fit the planning process in order to conduct IOSISP effectively (Teo et al. 1997). Hence, we are specifically interested in how planning approaches differ among networks. For this purpose a network contingency model needs to be developed. Consequently, our central research question is: "How does the network context influence the process and effectiveness of networked SISP?" The answer to this question will be derived both theoretically by means of a literature review of the next section and empirically by means of the two case studies conducted in Finland.

Literature review

We conducted a systematic literature review on the influence of network context on the approach and effectiveness of networked SISP. All relevant articles from IS journals were searched and analyzed in a concept-based framework (Webster et al. 2002). The factors derived from this literature review are complemented with network literature in order place these contextual factors within the network domain.

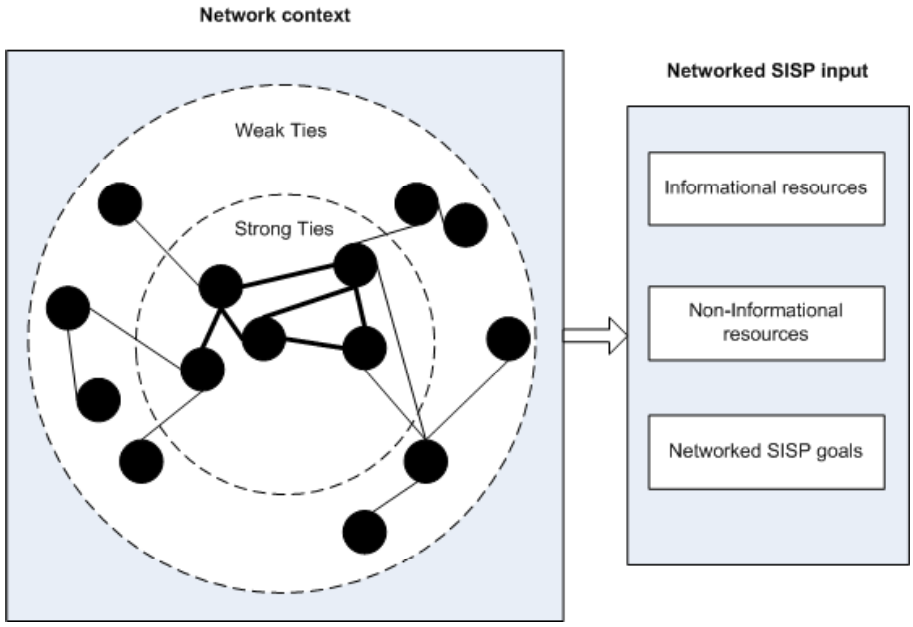

Figure 9 Conceptual research framework for Networked SISP (context model)

The literature review resulted in a conceptual research framework shown in figure 1 and 2. The framework is based on the aforementioned SISP model of Brown, but limited to 3 instead of 5 steps and is modified to explicate the network context and extended to incorporate concepts from the literature review. The framework consists of four major parts: (1) The network context (2) networked SISP input dimensions (3) networked SISP process dimensions, and (4) networked SISP effectiveness dimensions. The first two parts are visualized by figure 1. The network context consists of it's the involved organizations and their strong and weak network ties. The context of this network - like the size, structure and governance - denotes which informational and non-informational resources will be deployed and which goals the planning process aims to achieve. Figure 2 shows that these dimensions are direct inputs into the networked SISP process. The networked SISP process dimensions assess how the network organizations actually approach planning and are based on Segars and Grover (1999), Lin (2005) and Spil and Salmela (2007). Finally, this process will lead to a certain effectiveness of the planning process (Segars et al. 1998). As planning can be seen as a dynamic learning process, the effectiveness has some impact on the network and its partners (Grover et al. 2005; Salmela et al. 2002). The next sections will discuss the contextual factors that were found for each category.

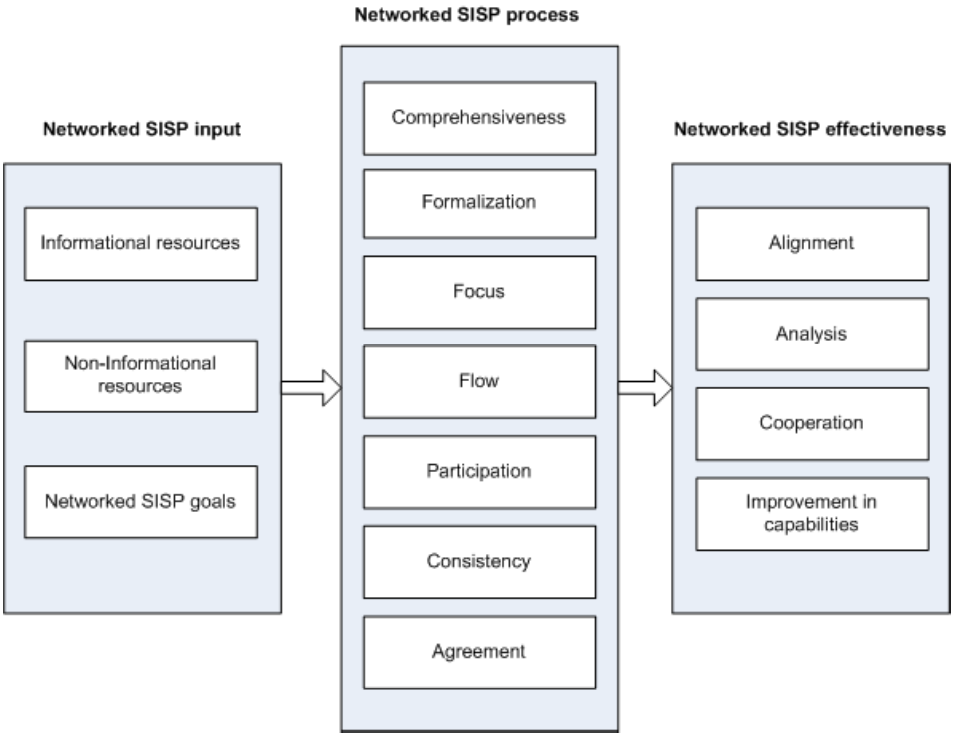

Figure 2 Conceptual research framework Networked SISP (input-process-output model)

Characteristics of the weak ties network

Traditionally, the external environment of an organization is seen as an input in the SISP process (Brown 2004; Lederer et al. 1996) and in that sense influences the process and effectiveness. However, in the network context, boundaries become permeable and the environment can be seen as a property of the network. We found in our literature review that the wider environment consists out of the following sub factors:

Type of industry

The information intensity of an industry might have an impact on the SISP process (Premkumar et al. 1991) as the resources can differ among industries. The industry type does not seem to influence the effectiveness of the SISP process (Premkumar et al. 1994b).

Heterogeneity

Heterogeneity refers to the number and diversity of external factors in an organization's external environment (Sabherwal et al. 1995). Differentiation in stakeholders during planning makes it harder to get consensus (Byrd et al. 1995). The inclusion of external stakeholders with conflicting interests can be expected to influence the coherence and timeliness of planning (Holley et al. 2004). Heterogeneity increases the complexity of this process, as all external stakeholders need to be taken into account and

hence SISP tends to be more comprehensive as the level of analysis within the SISP process increases (Sabherwal and King, 1995) .

Dynamism

Environmental dynamism refers to the unpredictability and rate of change in the external environment (Sabherwal et al. 1995). The implications of dynamism for SISP process is two sided: organizations need to adapt swiftly in a dynamic environment (Pyburn 1983). Conversely, organizations need analysis to keep track with uncertainty (Salmela et al. 2000). In practice, most managers are reluctant to decide quickly (Sabherwal et al. 1995). How to deal with uncertainty changes when an organization evolves: under conditions of increasing dynamism, organizational mechanisms are used by organizations to control and stabilize their relationship with the external environment (Grover et al. 2005). Beekun et al. (1993) and De Man (2006) argue from a resource-dependency perspective that under conditions of increasing environment turbulence, various inter organizational mechanisms are used by organizations to control and stabilize their relationship with the external environment. Provan (1984) and Beckman et al. (2004) suggest that environmental uncertainty will increase hierarchy, as the organizations will try to reinforce the relations with close partners. So, the degree of planning in a network will be related to the uncertainty organizations experience from the weak ties network.

Hostility

Hostility represents the threat of environmental elements that restrict resources (Sabherwal and King, 1992). Market pressure as an influence on the IOSISP process for instance, results in more hierarchy (Mulder et al. 2007). Hostility is associated with political processes, in which SISP is seen as a bargaining and negotiation process. Government agencies face more hostility (Bajjaly 1998) and usually have an administrative approach (Earl 1993), which characterize the process with low levels of formalization, comprehensiveness, consistency and participation (Segars et al. 1999).

Characteristics of the strong ties network

SISP varies according to different organizational circumstances (Wang et al. 2003) and thus among different forms of networks. These organizational circumstances can be divided in the following sub factors:

Network structure and governance

The planning of inter-organizational systems is usually embedded in a network. There are three types of networks based on coordination mechanisms (Ouchi 1979; Salmela et al. 2006): relational networks, based on trust; hierarchical networks, based on authority; and contractual networks, based on agreements. The different networks and their coordination mechanisms are related to their planning approach: markets lack planning and are coordinated by transactions and contractual agreements, hierarchical networks use formal planning (Alexander 1992), and relational networks coordinate and plan informally (Spil et al. 2007). The degree of planning is reflected in a network's governance structure, as there are three possibilities of governance in a network (Provan et al. 2007):

- Shared governance: no unique, formal governance structure other than through the collaborative interactions among members themselves, which can cause unsophisticated planning (Huxham 1993).
- Network administrative organization is an overarching authority that supports the leadership in a network, which creates an hierarchy mechanism and therefore more formal planning.

- Lead-organization: there is a more powerful organization in the network that has sufficient resources and legitimacy to play a lead role. A dominant partner causes hierarchy, which increases the comprehensiveness of planning (Finnegan et al. 2003).

Network size

Large and complex companies tend to follow more systematic and formalized strategic IS planning practices (Pyburn 1983). However, firm size does not seem to influence SISP effectiveness (Premkumar et al. 1994). Yet, the size of a network is an antecedent for network mechanisms and planning. A higher number of partners in a network is likely to lower the decision making authority and autonomy. This will lead to less hierarchy when the network is ill-structured. However, a network of many organization in the same sector needs more hierarchy to keep track of all parties and coordinate activities in the network (Astley 1984).

Organizational culture

Organizations with a formal culture are more likely to have a comprehensive SISP process (Earl 1993). Culture has an influence on decision making approaches in organizations, formalization and reward of innovation, which in their turn influence the SISP process (Guimares et al. 1989).

The role of the IS function

Centrality of IT the function has a negative influence on shared domain knowledge and results in less improvement in planning capabilities (Wang et al. 2003). A lack of shared domain knowledge between IT and business managers decreases the rationality and comprehensiveness of the SISP process (Sambamurthy et al. 1993). Decentralization can boost the differentiation in internal stakeholders, which makes it harder to get consensus (Byrd et al. 1995). Formalization of the IT unit is positively related with rationality of the SISP process (Sabherwal et al. 1995). The more the IT function is integrated with the business function, the more the SISP process becomes sophisticated (Sabherwal 1999).

Input dimensions

King (1988) mentions three kinds of inputs of the SISP process: informational inputs, non-informational inputs and SISP planning goals.

Informational resources

Business goals and plans are important inputs for the process as they determine the horizon and the effectiveness of SISP. Integration of Business Strategy Planning and SISP increases SISP sophistication, because it enables opportunities for IS to add strategic value (Sabherwal 1999). Top managers and users become more committed to SISP in case of an high integration (King et al. 1997). IS mission and vision are important informational inputs too and the quality of informational inputs has an influence on the perceived quality and effectiveness of SISP (Premkumar et al. 1994). Experience and knowledge of SISP increases the comprehensiveness (Grover et al. 2005).

Non-informational resources

User, IT staff and top management commitment are very important for the quality and effectiveness of SISP (Basu et al. 2002). A lack of financial resources decreases the comprehensiveness and adaptability of the SISP process (Segars et al. 1999). IS development methods, often used by consultants, enhances

comprehensiveness, but can be too rigid (Earl 1993). Trust between stakeholders in the planning process is important: low relational certainty among network partners favor hierarchical or contractual control mechanisms. If partners in a network have worked more often together, the number of formal agreements in a network will diminish. Non-informational resources positively influences the quality and effectiveness of SISP (Premkumar et al. 1994).

Networked SISP goals

The reasons for conducting SISP also influence its process (King 1988). Organizations make a trade-off between implementation speed and fit with the organizational goals. The choice depends on what the organization values most. Networks with disparate partners need leadership and comprehensive planning to harmonize (Volkoff et al. 1999). A major factor for these networked SISP goals is the strategic importance of the (planned) IS in general for an organization and IOS in specific. The strategic grid model is used to categorize planning approaches (Jiang et al. 1999). Organizations that plan IS with a high strategic impact commit more resources to planning, have a long-term planning horizon, and perform quality planning, otherwise SISP tends to be more short-term and tactical. High strategic impact means higher levels of IS business integration and top management and user involvement (Premkumar et al. 1992). It also raises acceptance of SISP in the organization, enables resources, increases the perceived usefulness of SISP and increases the support from top management for SISP. The relatively higher complexity of IOS compared to intra-organizational systems urges the need for IOS planning (Finnegan et al. 1999). There is a relation between the network structure and the nature of IOS, denoting the structurability, coordination mechanism and conflict in coordination of the IOS (Kumar et al. 1996). IOS planning is more fluid than IS, resulting in little planning (Sabherwal et al. 1995). Ownership is also important: the more partners in a network mutually own the IS, the more hierarchic the coordination and planning (Provan 1984).

Process dimensions

Segars et al. (1999) developed a model of the dimensions of the SISP process, which is based on past SISP literature. They induced 6 process dimensions which together typify the SISP process:

- Comprehensiveness (Non-comprehensive vs. Comprehensive): the extent to which an organization attempts to be exhaustive or inclusive in making and integrating strategic decisions.
- Formalization (Informal vs. formal): existence of structures, techniques, written procedures, and policies that guide the planning process.
- Focus (Creativity vs. Control): balance between creativity and control orientations inherent within the process structure.
- Flow (Bottom-Up vs. Top-Down): locus of authority or devolution of responsibilities for planning.
- Participation (Narrow Participation vs. Broad Participation): the breadth of involvement in planning; e.g. number of planners involved, representation from various functional areas.
- Consistency (Inconsistent vs. Consistent): the frequency of planning activities or cycles as well as the frequency of evaluation/revision of strategic choices.

Spil et al. (2007) introduced 5 inter-organizational specific variables, based on i.e. Lin (2005): Competitive pressure, Trading readiness, Contractual level, Financial agreements and Certainty. Except the Contractual and Financial agreements, those variables are covered by the context of networked SISP.

Effectiveness dimensions

Segars and Grover (1998) formulated 4 dimensions for the measurement of SISP success: (1) alignment of IS and Business strategy, (2) Analysis of processes, procedures and technologies, (3) Cooperation, which reflects agreement to implement the plan and (4) Improvement in capabilities to achieve IS-Business alignment. Although the dimensions stay the same in a network environment, the content of these dimensions can change. Alignment for example is not only alignment of organizational and information objectives, it is also about aligning general network objectives with opposing organizational objectives. This paper will not address those issues, as the primary focus is on contextual factors instead of success measurement.

Methods

In order to empirically substantiate the network characteristics we designed an explorative case study using in-depth semi-structured interviews and project documentation in a multi-cases design (Yin 1994). We chose the interview method as it allows the researchers to dig deeper into the subject matter by using probe questions. The contextual factors on the network context and input dimensions that were found in the literature review were operationalized into interview questions. Relevant items from Mulder et al. (2007) interview scheme on process and effectiveness of IOSISP were added to our interview scheme. The following subjects were covered by the interview scheme: introduction and focal project; networked SISP contextual dimensions; networked SISP process dimensions; and networked SISP effectiveness dimensions

Personal contacts of one of the researchers were used to conduct a pilot interview within a test case, a GIS development project in South-Western Finland. The pilot results were used to test and fine tune the interview on comprehensibility and reliability. Structured interview protocols were made to ensure validity.

Subsequently, two experts with vast experience in inter-organizational municipal projects in Finland were interviewed to obtain background information on inter-municipality projects in Finland and to indentify and select two projects that differed in planning approach and fitted in the definition of networked SISP. Case selection criteria were:

- Two cases that differ in planning approach (Paré 2004).
- Three or more parties should be involved (Ruohonen 1991)
- There should be a strategic planning process
- IOS should be involved
- Strategic process should be completed in order to assess effectiveness
- All relevant stakeholder groups should be represented: Top management, IT staff and users
- Finally, the case should within reachable distance

We chose to focus on two cases in which part of the core group of organizations that constituted the network was similar. Although this was not part of our aforementioned initial selection criteria, it provided us with the opportunity to vary on the planning approach while keeping most of the other variables constant for as far as possible in this type of qualitative in-depth study. We believe this approach to be more worthwhile than focusing on improving external validity with a completely different network group. In addition, we explicitly considered learning effects in the second case, as they provide us with an added temporal dimension beyond the single case at hand.

The first case was a bottom-up and project based case, VETUMA, in which four municipalities and two ministries planned an online identification and payment infrastructure between 2004 and 2006. The second case was more top-down and comprehensive: the same four municipalities formulated an IT strategy for the metropolitan area between the summers of 2006 and 2007. The municipalities and state agencies differed in size: from very small (700 employees) to very big (40.000 employees).

By using snowballing and theoretical sampling (Ruohonen 1991) most stakeholders in both projects were selected. Participants worked in different organizational layers: from CIO's to analysts. Some participants were involved in both projects and therefore they were interviewed about both cases in the same interview.

A total number of 13 interviews were conducted with 15 stakeholders in a time period of two months. Two interviews were conducted with two stakeholder at the same time, in which the CIO and project manager of the same municipality were complementing each other in the interview. The interviews took place at the interviewee's office and took on average approximately 1.5 hour. All interviews were audio taped and transcribed. Apart from interviews, a large number of project documents were collected.

Analysis was done by coding relevant words and phrases in the interview transcriptions with the qualitative data analysis program QSR NVivo. A conceptually clustered matrix in the analysis program was used to cluster all coded phrases on concepts (Miles et al. 1994), in which the factors and interviewees were listed on differences and similarities. Subsequently, a cross-case analysis was conducted to compare both cases.

Findings from two cases in Helsinki's metropolitan area

The VETUMA case

The VETUMA project started in the beginning of 2004 and its planning phase lasted until 2006. Two project managers from the municipalities of Espoo and Vantaa recognized that they needed an online identification and payment infrastructure. Soon, the cities of Helsinki and Kauniainen joined. As more actors in the public sector could benefit, the project contacted JUHTA, a public administration recommendation council, and the Information Society program. Both parties entered the project to guarantee nationwide diffusion of the infrastructure. Reasons for the cooperation were mostly operational: efficiency, available to all municipalities and standardization to ensure interoperability. The founding members expected the planning phase to be one year, but eventually the planning lasted for more than years. Currently, about 20 governmental agencies use the VETUMA service.

Characteristics of the weak ties network

Several characteristics of the weak ties network had an influence on the project: e.g., technology, for instance the different forms of identification, increased technological complexity; legislation on cooperative procurement that increased juridical complexity; high autonomy of Finnish municipalities delayed diffusion; etc.

The VETUMA project had many weak ties: banks, the national registration institute and mobile operators were involved to provide identification channels; potential vendors for the ASP service; government agencies and municipalities that were willing or contemplating to adopt VETUMA; the Katve consortium of the tax, labor and social insurance agency that already had a similar identification system; the state owned procurement office Hansel; the ministry of Trade and Industry; the municipality association Kunta Lieto; and finally, the State Treasury. Some initially weak ties became part of the core network, like the public administration recommendation agency JUHTA, the Information Society Program, which was part of the prime-minister's office and Valt IT, the information management unit of the Ministry of Finance.

Most weak ties provided resources for the project: Hansel provided procurement expertise, the state treasury took care of contracts and Katve provided documentation of their identification system. On the other hand, procurement law initially restricted the municipalities to use Katve's readymade identification system. In general there were no conflicts between external partners. However, the more weak ties you have to deal with, the more negotiations, discussions, bargaining, etc. For example, potential municipalities had to be convinced of the necessity of VETUMA, as there was no way to coerce them to use VETUMA. This increased heterogeneity slowed down the planning process and urged the need for comprehensiveness. Most of the stakeholders mentioned the difficulties in procurement law as the most important unpredictable occurrence during the project. The EU procurement law requires a common procurement office on behalf of the municipalities and state agencies to allow multiple partners to make use of the service. Now, every municipality that wanted use had to send in a power of attorney, which took a long time.

Characteristics of the strong ties network

The size of the strong connections in the network grew like a snowball: Vantaa and Espoo started, soon Helsinki and Kauniainen joined, then JUHTA and the Information Society program joined. Later on, Valt IT became a dominant partner as it took the ownership of the IOS. These were the strong ties of the network, but there were a dozen weaker ties that were involved. This growing of the network made the planning process more complex. Some players were larger than others, like Helsinki is much bigger than Kauniainen, but the distribution of power was more related to the effort made by the persons themselves. Most parties benefited from the VETUMA system, but some on short term, like bigger partners that already have services that need strong identification and payment, and smaller parties that will use the service in the future bottom-up. Although the perspectives of the parties differed in scope and time schedule, there were no conflicts and in general there was agreement on the course of action. Most of the stakeholders in the core network knew each other quite well before the cooperation, especially the members from the metropolitan municipalities. This resulted in an informal and constructive atmosphere and cooperation mainly based on trust:

"Trust was the base of al […], that people trusted in that these few people will work for us and this is good for all of us and they trusted us, and that is one of the most important issues. Even we have a lot of organizations, there were few key persons and they were trusted."

When the planning phase went into the procurement process, contractual and financial agreements were made. The network governance mechanism moved towards market based coordination. Formally, there were two leaders in the project: the chair in the project group from Vantaa and the chair in the steering group from Helsinki. Informally, the member of the information society program played an important leadership role. The IT needed for the project was mostly distributed among the network partners, so decentralized and informal. According to one of the stakeholders:

"It was more like if any kind of procedure were needed, there was decided after the need arose."

As the procurement process developed, the IT function became more centralized with the Ministry of Finance and the vendor, which made the planning more comprehensive.

Input dimensions

The SISP goal of the network was to start a project to come up with a common IOS, which formed an infrastructural layer for eServices. The VETUMA infrastructure is a "pooled" IOS system, shared by many applications among multiple organizations, which can be a potential reason for the high level of agreement in the collaboration (Kumar and Van Dissel 1996). The IOS is of high importance on an operational level as this will be the infrastructure for eServices that need identification of citizens, but VETIMA is not perceived as strategic:

"VETUMA services are rather a must than a competitive advantage. Of course without this kind of services you cannot offer certain types of eServices.

The ownership shifted from a distribution among the municipalities, based on a inhabitants ratio, to the Ministry of Finance. Although there has been a lot of cooperation and there were meetings on different levels in the metropolitan area, there was no strategy or policy that was a direct input: project managers from the cities of Vantaa and Espoo came up with the idea for VETUMA. Later on, the information society program integrated the VETUMA project into their own strategy. In a way this project was quite unique, as the municipal sector and state government sector had not cooperated before on IT projects, so no one had experience with such a project. involved stakeholders came from IT departments, such as CIO's, IT project managers and analysts. Top management and users were hardly involved, as the IT management stakeholders found the VETUMA system to operational and technical to actively involve them. In addition, they argued that most top managers were not interested in VETUMA. There was knowledge overlap between CIO's and technical IT professionals: some members of the project group were member of the steering group, so most members of the steering group knew about the technical side of the project and most technical people in the project group knew about the strategic goals. Initially, funds for the project came from the starting municipalities, but soon most funds came from the information society program and the ministry of finance. The ministry of finance information management unit, Valt IT, decided to pay the start-up costs for the first two years of the project. Naturally, most human resources came from the organizing partners. Most of the human resources, like members of the planning team, did not get any extra time in their job for the VETUMA project. No methods, explicit guidelines or consultants were used during the planning phase.

Process and effectiveness dimensions

The planning process started quite incomprehensive with few documentation and analyses, but became gradually more comprehensive when the state government and the vendor came into play. On the degree of formalization, the project was quite informal and project based. For example, there was no formal appointment process or formal organizational status. Standardization and cost-efficiency were very important, so the project was strongly focused on control instead of creativity. Most decisions were made in the project group, at the lowest level, but some decisions that were about the procurement were made in the steering group or even on organizational level. Participation from the core network was quite broad, most organizations had 2 representatives and the mixture of representatives was quite flexible. Most organizations coordinated the decisions within their own organization, without needing formal approval. The project group met on a regular basis, but the frequency differed a lot: sometimes weekly, sometimes monthly. The steering group met approximately 12 times during the year..

The planning was not really effective in the sense of new plans or ideas and alignment between Business and IT. The stakeholders had the opinion that VETUMA was developed nationwide, without taking into account lack of existing services and integration difficulties. On personal level, stakeholders learned a lot about interagency cooperation, procurement law, technology and how to networked planning together. However, how much the organization itself has learned depends on knowledge transfer. There is a strong commitment to implement the VETUMA system. More than 60 organizations joined the project and about 20 organizations are actually using VETUMA. However, there are no penalties, because Finnish municipalities are still very independent. The experiences in planning VETUMA are useful for future planning project, but it did not affect the planning processes of the network partners.

IT plan case

Since the 70's, the metropolitan area has been cooperating on IT projects. The development of an IT strategy for Helsinki's metropolitan area started in the summer of 2006. A few years before the city majors were stimulated by the central government to discuss cooperation. They agreed on a strategy

describing services that could be done together. All functional departments, including the IT department, were asked to make joint strategies and therefore the IT directors and some functional IT manager formed a planning committee. Based on the general strategy and the plans of the functional departments, they investigated the impact on the IT function and set high-level goals on common e-services. Within the schedule of one year, the committee delivered a plan approved by the metropolitan area council and majors.

Characteristics of the weak ties network

Traditionally, Finnish municipalities are very autonomous. The first cabinet of the Finnish prime-minister Vanhanen decided that this autonomy has to decrease in order to achieve more efficiency in the municipal sector. Therefore, the central government put pressure on the municipalities in the metropolitan area to increase cooperation. This external force was the initial impulse for the majors of the metropolitan area to develop a strategy on common eServices. On the other hand, the development of the IT plan that originated from this state government pressure was more less an internal project, highly embedded in the network and its structure. Only one weak tie was involved in the formulation of the IT plan. The Local Government IT Management Unit - Kunta IT - had an advisory and knowledge base role in the project. Kunta IT serves the same goals, but was informed about the differences between the metropolitan area and other parts of Finland, as the needs and problem differ immensely. No unpredictable events from weakly tied parties had happened during the project, which reflects a stable environment.

Characteristics of the strong ties network

The metropolitan area network consists of four municipalities: Espoo, Helsinki, Kauniainen and Vantaa. This network has vast experience with working together, in several organs, like formal and informal committees, boards and on top of the metropolitan area a council, in which politicians of all the network partners decide on common fields. The cooperation resulted in an official metropolitan area coordination group for information systems and will consist of it directors of the CIO's of the four cities. There were no contractual of financial agreements made between the partners. In sum, the network of Finland's metropolitan area is both based on hierarchy and trust and partly governed by an overarching authority. There are differences among the network partners: the smaller the municipality, the more important the need for cooperation, as joint resources can enable services. Furthermore, the more effort that is made by a member of the planning team, the more decision power he or she has. Although Helsinki is the biggest player in the network, Espoo was democratically chosen by the network council as the chair in the planning team and therefore had the leadership role in the project. There were some disagreements in the goal phase of the planning process. However, technical fields - like IS - stay, according to the stakeholders, a neutral and rather difficult topic to understand and therefore irrelevant for political behavior. The members of the planning team worked a lot together, so they knew each other very good and trusted each other. The good atmosphere that resulted of this eased the cooperation. The IT function in the network is still decentralized among the four network partners and the IT needed for the project was informally arranged. However, it was agreed in the plan that it will be centralized among the joint services in the future.

Input dimensions

A clear input to the formulation of the IT plan was the strategy of the majors and the functional divisions, which made the project very top-down. On the other hand, it did not increased the creativity in the planning process, like a stakeholder commented:

"we couldn't do something that was new..sometimes we had do something stupid because it was a political decision, it didn't come from us sometimes".

Most stakeholders had prior experience and knowledge with planning IOS in the municipal area, but it was for all the first time that a more institutionalized approach, instead of project approach, was chosen. Formulation of the IT plan was a job for the IT management: IT directors and functional IT managers were highly involved, but only 1 technical IT professional was directly in the planning committee. The top-down approach assured that top-management was fairly committed and that the IT directors knew about the strategic goals. The majors on the other hand knew less about the technical details. The IT planning group had to report two times to majors and metropolitan council. The user managers were highly committed: their functional strategies were a direct input and during the planning process workshops with functional departments were held. There were hardly any funds needed for the project and for the planning committee the project was part of their job and so there was no extra time dedicated. This was for some persons problematic:

"it is quite hard, for example I was in a big competition at the same time and I was in that project also in the beginning. "

No planning methods or consultants were used by the planning committee. The goals of the planning were strategic: the IS that has to be integrated in the future are on vital municipal functions, like healthcare and education, so of major importance. This can be a reason for the top-down approach. Yet, the current and planned dedicated IOS are less important, like the VETUMA system, and most IS are not integrated. So, the ownership of the IS is distributed among the cities and has not been an issue in the formulation of this IT plan. However, some stakeholders foresee discussions about ownership of IS in the future.

Process and effectiveness dimensions

Analyses based on statistical data were made to investigate the current IT resources, formulate goals and strategy on future status and identify projects. The resulting strategy document was pretty comprehensive, but did not contain guidelines how to implement the strategy. There was high degree of formalization: the members were formally appointed by the metropolitan area council and the distribution of chairs was a formal political process. Stakeholders saw the planning team as an official appointed committee. The focus of the project was on control:

"We just identify just the items we had to work on in the future. We didn't try to invent anything especially new on the strategies or the strategic goals or something."

There was a top-down structure for the final decisions and top managers gave guidelines for decisions in the planning team. The planning team made a proposal which was approved by the city council and the majors. Two representatives per organization, mostly one IT director and one IT user manager, were formally selected, but broad participation on management level was achieved. There were frequent meetings, about 15 in total, which indicates a high degree of consistency. Meetings are still continued in a new regional IT board.

The alignment was moderately high. The planning committee came with few concrete plans or objectives, as it stayed on a very strategic level. On the other hand, the business goals came clearly back in the IT strategy plan.

Analysis was high: stakeholders learned a lot about each other's IT organizations and about collaboration.

"Well, personally to me it was very, it was a good learning process, mainly I learned a lot about these other cities, how they have organized their IT."

The IT strategy is not detailed, so commitment to implement the plan depends on further discussions on the feasibility. There are no formal penalties, but the politicians approved the strategy, municipalities and their departments are stimulated. Therefore, the degree of cooperation is low to medium. There is some improvement in capabilities, as this was a good exercise to cooperate together and the exchange of each

other's IT strategy and best practices gave insight for the organization's own planning process. However more knowledge management is needed as one stakeholder commented:

"I think it should be much easier if we have a fulltime secretary, who can record things fulltime and can collect statistics, like this, it should be much easier."

Discussion of the findings

Although the number of cases and interviewees are limited, the analysis of both cases demonstrates that the context of the network and its goals have an influence on how the network approach SISP. The duration and delay in the VETUMA project is significantly larger than in the IT plan case. According to the stakeholders this is mainly caused by the configuration of the network and external forces: the VETUMA project started with two municipalities and grew finally to over 60 organizations in the implementation phase. The core network, strong ties, increased from two to seven and the project had to deal an increasing number of weak ties. The environmental heterogeneity and network complexity became larger during the project and the need for comprehensiveness in the planning process raised. The influence from heterogeneity on how the network approached SISP supports earlier findings by Astley (1984) and Sabherwal et al. (1995) and the influence from the high change in the configuration of weak ties complies with findings by Salmela et al. (2000). Although Granovetter (1973)'s weak ties increased complexity, they were a source of resources for the project and proved to be important to solve impeders. Environmental uncertainty had a role in the IT plan case, in the form of pressure from the central government on municipalities to merge and cooperate. This was picked up by the majors of the metropolitan area and a reason to reinforce their strong ties, which is in line with findings by Beckman et al. (2004) and Provan (1984).

Both cases show that existing relations between stakeholders increase the relational certainty, in other words trust, and therefore has a positive effect on the participation, which gets more flexible, and improves the learning effect and in that sense the networked SISP effectiveness. For example, in the IT plan case members of the planning team exchanged best practices on IT strategy and governance, which would unlikely occur with low relational certainty. Apart from trust, the cases differed a bit in network governance mechanism: in the VETUMA case, financial and contractual agreements were made for the procurement process, which resembles a market mechanism. On the other hand, the metropolitan city council, the top-down initiation and the formation of a new regional IT board within the IT plan case were obvious signs of hierarchical mechanisms. As hierarchy, in contrast to market mechanism, is associated with planning, this could explain the differences in formalization, comprehensiveness and flow. This emphasizes the findings of Alexander (1992) and Spil et al. (2007). Both projects did not have a single dominant party, as the power during decisions was mainly based on the effort made by the representative self. The role of the IT function was similar for both cases at the start of the VETUMA case: the partners delivered IT resources in an informal way and decentralized. However, when Valt IT and vendor entered the VETUMA project, the IT function became centralized and more formal: the supply part was responsibility for the Vendor and the demand part for Valt IT. This changed made the planning process more comprehensiveness, which was predicted by Sabherwal et al. (1995).

Regarding the input dimensions, a remarkable difference was the input from a business strategy and its influence on SISP approach and effectiveness. The IT plan case was clearly started and feed by the strategy and vision of the majors, which resulted in a high level of formalization, a top-down flow in the decision making and a high level of alignment, as the strategic goals were clearly transformed into IT goals in the IT strategy plan. On the other hand, it The SISP goals and the strategic importance of the IOS were important factors in how SISP was approached and the resources.

Conclusions

Key findings

The objective of this paper was to explore how the context of networked SISP has an impact on the approach and success of networked SISP. This has been explored by a systematic literature review and the analysis of two cases in the metropolitan area. The key findings are:

- The comprehensiveness of the planning process should fit the complexity and dynamics of the network and its environment, in order to keep track of all strong and weak ties. There seems to be a paradox between the complexity of the weak ties, which slows down the planning process, and the resources weak ties provide or enable.

- Environmental uncertainty can reinforce strong ties within the network and increases the use of hierarchical network mechanism, which increases the degree of planning. On the other hand, market mechanisms, due to influence from private sector, decrease the degree of planning.

- Networked SISP that builds on prior experience and existing relations will increase trust in the planning process, which increases the learning process.

- As networks are less hierarchical, the IT function is mainly decentralized and fairly informal, which decrease the rationality of the planning process. As networks are going to cooperate more on the same services, this can shift to a centralized and formalized IT function.

- Informational resources, such as the input of a strategy or policy, have an influence on the non-informational resources, like commitment from user and top management, how SISP is approached and how well it is aligned.

- The degree of informational and non-informational resources provided to the research process depends on the perceived importance of SISP and the IOS that are planned or going to be integrated and the commitment of weak ties. The empirical findings demonstrate that SISP is still perceived as of minor importance.

- The degree to which SISP is a learning process depends on how the network and its partners deal with the conversation and diffusion of knowledge. External partners, like the Local Government IT management unit Kunta IT, can function as knowledge base and ensure that prior networked SISP knowledge is reused.

Limitations

As case studies place phenomena in its context, this research method was highly appropriate for this research. However, this context makes decreases the external validity as no statistical generalizations are possible (Yin 1994). The two case studies in Finland's metropolitan area can deviate from other networked SISP in various ways: the governmental context, the heterogeneity in network partners, cultural aspects, etc. Both cases consisted of the same network partners and a few stakeholders. This has both a limitation, as the network can have a learning effect, but it has also methodological advantages as it increases the ability to make controlled observations (Lee 1989). Furthermore, the number of cases is quite limited.

Managerial contributions

Practically, this paper gives practitioners insight on how planning within their network is affected. It makes them aware of the importance of the fit between planning process and the context networked SISP.

For example, a rigid inter-organizational structure would not fit with a very emergent planning approach. We recommend to analyze the external environment, the network configuration including its strong and weak ties, the nature of the planned IOS and take these findings in account in inter-organizational and SISP design. Many of the strategic activities in the two cases are emergent, given the effectiveness of these activities, a more planned behavior would be more proactive, but not necessarily more effective. The cases demonstrate that policy from the central government, the number of stakeholders in and outside the network, the increasing importance of joint e-services and pre-existing network governance are practical issues.

Future research agenda

This research paper makes an attempt to connect network literature to traditional SISP literature. The theory of strong and weak ties (Granovetter 1973) seems to be very promising in describing the fluent nature of networks and networked SISP. The network context is an addition to prior models on networked SISP. Due to the limitations in external validity, the contextual factors and their relations derived from literature and empirics need further substantiation by both qualitative and quantitative research. Future research on networked SISP should make more use of existing network literature to come up with a descriptive model of networked SISP. Networks and planning seems to be dynamic and although both case studies tried to reflect this dynamics, future research could focus on how networked SISP evolve over time, like the SISP stages model of Grover et al. (2005). A longitudinal research design among several networks, during their full life cycle, could demonstrate if there are some stages in the evolution of networked SISP or else that networks and its planning are pragmatic and opportunistic in nature

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