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Keywords
Health care, networks, network management, case study

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Abstract
This paper investigates the basic functions of network management. We review network management, and compare it with managing hierarchies and markets. From this comparison we develop a framework of four required network management functions: framing, activating, mobilizing and synthesizing. We further develop this framework empirically through a case study of two different types of health and social care networks: one that produces elderly home care services and one that develops interactive, technology-based services for elderly living at their home. We find that the four network management functions manifest in different ways in the studied networks; different situations naturally require different types of management, but the essence of the functions remains the same, indicating that despite dissimilarities between different networks their management rests on four fundamentally similar managerial functions.

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1 Introduction

Network management is an increasingly topical issue in network research. Network management has been studied in several fields, including but not limited to industrial and business networks (Ford et al. 2003, Ford and Håkansson 2006, Möller and Halinen 1999), strategic networks (Jarillo 1988, Möller et al. 2005, Möller and Rajala 2007, Gulati et al. 2000), innovation and development networks (Dhanaraj and Parkhe 2006, Heikkinen et al. 2007), health care networks (Provan and Milward 1995, Provan et al. 2004), and public policy networks (Kenis and Provan 2006, Klijn et al. 1995, Kickert and Koppenjan 1997, Agranoff and McGuire 2003, McGuire 2006). These studies have looked at networks and their management from several different perspectives. For instance, network management has been studied at different levels of analysis from individual relationships to relationship portfolios and from strategic nets to macro-level networks (Möller and Halinen 1999). It has been shown that network management and its required mechanisms and capabilities are different in different types of networks, such as in buyer-supplier networks (Lambert and Cooper 2000), in innovation networks (Dhanaraj and Parkhe 2006), and overall in stable, renewal and emerging networks (Möller et al. 2005, Möller and Svahn 2003).

Despite extensive research done on network management, much of it cited above, we still seem to lack understanding of the basic elements of what network managers actually do – or should do – when they manage a network. For instance, although we know that there are different analytical levels where we can witness differences in the characteristics of network management, that there are different roles firms can adopt in different networks, and that different types of networks require different managerial mechanisms and capabilities, we still have little understanding of what connects these different frameworks of network management together. In other words, we still lack a uniting framework of the basic elements of network management that would be valid in all types of network, at all levels of networking, and in all possible roles of networking.

In this paper we seek to answer the following question: What are the basic elements of network management? We first introduce the current discussion in network management in general. Secondly, we derive basic requirements for network management by discussing the requirements for management in hierarchies and markets. We present a framework of four network management functions and further develop the framework through a study of two cases. Finally, we present conclusions and suggestions for further research.

The empirical study of this paper focuses on two elderly care networks operating in Finland. The purpose of the empirical part is to add understanding on our theoretically-driven network management framework. Elderly care networks make a fruitful target for network management case studies. The ageing of population presents one of the most critical challenges for many European countries, especially Finland, and it seems that tackling this challenge requires effective networking (Stakes 2006, 8-9; Mur-Veeman et al. 2003; Vaarama et al. 2001, 11-14; Kinnunen 2002; MSAH 2001; Katsaliaki et al. 2005).

2 Manageability of networks

A continuing debate is on the manageability of networks. The strategic networks perspective (Jarillo 1988; Möller et al. 2005; Möller and Svahn 2003; Gulati et al. 2000) asserts that hub organizations can take the initiative in managing a network and taking care of its development. Others, most notably the IMP group (Turnbull et al. 1996; Håkansson and Ford 2002; Ford and Håkansson 2006), argue that no single firm can manage a network and similarly individual network members can only try to cope within a network.

The answer to the question whether networks can be managed or not depends ultimately on the definition we adopt for the concepts of "network" and "management". The strategic networks perspective defines networks as more or less intentionally developed, limited groups of firms. It follows from this definition that strategic networks are entities that *are* being managed, if we accept that "intentional network management" is a part of a wider concept "network management". The IMP group on the other hand studies macro-networks or "networks of networks", and it is quite easy to accept the argument that in such wide networks a single firm can only try to cope as a single firm has only limited influence on the whole surrounding networks. These two contrasting perspectives thus define networks differently, and their dissimilar perspectives on the manageability of networks follow logically from these definitional differences.

In this paper we follow Harland and Knight (2001) and Möller et al. (2005) and claim that manageability of *any* network – be it a strategic network or a macro network and independently of whether we look at management from the viewpoint of a single company or a whole network (Provan et al. 2007) – lies along a continuum from no control at all to full control. Macro networks may be closer to the no control end of the continuum, whereas strategic networks are closer to the full control end, but neither one is located at the extreme end of the continuum. This idea will be further collaborated when we next compare the two other governance modes to network management.

3 Managing value systems: networks, markets, and hierarchies

In this section we will discuss the management of value systems; the differences, and similarities, between managing networks, markets and hierarchies. Based on this foundation we then construct our network management framework later in this paper; we identify, define and discuss the basic elements of network management.

Business networks are defined as something else apart from business hierarchies and buyer-seller markets. Here we follow a "governance perspective" to the coordination of social life (e.g. Thompson et al. 1995), which identifies three distinct modes of governance: markets, hierarchies, and networks. According to this perspective, a network can be defined as an intermediary, or alternative, form of governance apart from pure markets and pure hierarchies, where "two or more firms which, due to the intensity of their interaction, constitute a subset of one (or several) market(s)" (Thorelli 1986, 38; also Jones et al. 1997; Park 1996; Powell 1990; Thompson et al. 1995). Network as a governance mode may be defined as a group of autonomous actors that have repeated, enduring relations with one another in order to achieve some stated or un-stated objective(s), while lacking a legitimate authority that arbitrates and resolves disputes that may arise among the actors (Podolny and Page 1998).

Managing hierarchies

Watson (2006, 167) defines the hierarchical business management concept broadly as the "overall shaping of relationships, understandings and processes *within* a work organization to bring about the completion of the tasks undertaken in the organization's name in such a way that the organization continues into the future" (emphasis added). Management is thus a function that by definition has to be carried out in every organization that wants to exist in the future and managerial work is the "activity of bringing about this shaping", while managers are the people who are given the official or unofficial responsibility for carrying out this work (ibid., 167-168).

Tsoukas (1994, 298) argues that the power of business managers to manage organizations derives ultimately from the socio-economic industrial structure of business, where the management is "vested with a [specific] set of causal powers". These causal powers for managers are (1) the ability to *control* an organization through superior-subordinate relationships; (2) the ability to elicit active *cooperation* from subordinate members of the organization through the provision of rewards; (3) and the *drive towards seeking efficiency and*

effectiveness from combined resources. These causal powers are related to the fundamental nature of management, and they are in themselves a contradictory set (e.g. control and cooperation may sometimes be at odds with each other, and balancing efficiency and effectiveness may be difficult). The three causal powers give rise to the hierarchical business management. It is because of these powers that managers are, firstly, driven towards seeking efficiency and effectiveness, and secondly are able to control and elicit cooperation in an organization towards producing value. The required functions of management, stemming from the "causal powers" identified above can be summarized as *planning*, *organizing*, *leading*, and controlling. (Tsoukas ,1994) The argument is that in order to operate effectively and efficiently, business organizations need to (1) know where to go and how to get there (i.e. planning), (2) to build the structures, resources and coordination it needs to get where it wants to go (organizing), (3) to direct and energize people to carry out needed activities (leading), and (4) to follow-up that the organization ultimately gets where it wants to get (controlling).

Managing markets

In price-based competitive markets management can be understood as management of the buying process (Johnston and Lewin 1996). In the buying process both the buyer and the seller operate and are managed internally as independent hierarchies, and the coordination between them is achieved through the buying process and the resulting purchase contracts. From the viewpoint of buyer, the beginning of the buying process – i.e. need recognition, determining characteristics and establishing specifications – are about *planning*. The next phases – i.e. identifying potential sources, requesting proposals, evaluating proposals and selecting the supplier – are about *organizing* the purchase. The final stage – i.e. post-purchase evaluation – is about *controlling* the purchase. The actual activities that are needed to produce the purchased products or services are at the seller's responsibility, and from the buyer's perspective *leading* of these activities is reduced to stipulating the rewards and sanctions of the purchase in the purchase contract. From seller's viewpoint, *planning* is done already by the buyer through the specifications of the purchase. The seller's responsibility is then to *plan* and *organize* its *internal* resources and activities that are needed to fulfill the purchase contract. Similarly, *leading* and *controlling* the seller's internal resources and activities is the responsibility of the seller, although the buyer may indirectly influence this leading and controlling by stipulating rewards and sanctions for the seller's specific resources and activities in the purchase contract. In this way both the buyer and the seller take part in managing the value creation that takes place through the competitive market.

Since the seller and the buyer are both independent organizations, they take independently care of their internal planning, organizing, leading, and controlling. However, their value-creating activities and resources are coordinated through the purchase process and the resulting contract. This is why, in contrast to hierarchies, in markets no organization can fully plan, organize, lead, or control value-creation.

Comparing the management of the three governance modes

Our starting premise for this discussion is that networks are something else apart from hierarchies and markets. We argue, however, that all of the three types of governance are based on the same idea of value creation: they can always be defined as a set of actors, resources and activities (the ARA model for networks, see Håkansson and Johansson 1992; Håkansson and Snehota 1995) that produce some value. Within this definition, actors are those who perform activities and control resources, and activities are the usage of resources to change other resources. In hierarchies these resources and activities reside "inside" the organization and can be managed as such. In markets resources and activities reside "inside" independent buyers and sellers and are managed as such, and coordination in between the buyer and the seller is achieved through the buying process. Finally, in networks resources and activities are not necessarily completely owned by independent organizations, but are mutually managed through an interactive, adaptive negotiation process.

Because hierarchies, networks and markets are all value-creating systems, and despite their contingent dissimilarities, we further argue that the basic requirements for managing them are the same. These requirements are:

1. Managers need to make sure that the actors in the hierarchy/market/network know what value is to be created and how the hierarchy/market/network can bring about this value.
2. Managers need to organize the patterns of actors, resources and activities that are needed to bring about the value.
3. Managers need to make actors committed to carry out the value-creating activities.
4. Managers need to control that the value is indeed created as planned and as efficiently as possible, and if needed carry out corrective measures.

In business management literature (Watson 2006; Tsoukas 1994) these requirements correspond to the hierarchical management functions of planning, organizing, leading, and controlling. However, although the requirements for managing hierarchies, markets and networks are fundamentally the same, network management cannot be based on neither hierarchical (i.e. authority-based) nor market-based (i.e. price-based, competitive contracting) management, because network relationships are based on relationships among autonomous units and these relationships are based on trust, not on authority or price-based competition (e.g. Håkansson and Ford 2002, Ford and Håkansson 2006). The fundamental point is that in networks no organization can fully control, or manage, its networked resources in isolation, since many of the resources available to a firm are under the direct control of other actors in the network and can only be controlled or managed through the medium of interactive relationships between the actors. In the next section we elaborate on the basic elements on network management.

4 Four network management functions

Broadly conceived, network management can be defined as improving the ability of the network to operate towards accomplishing its varying objectives, or as the means by which members of the network influence each other and/or the network as a whole in order to improve network cooperation. In the previous section we argued that there are four network management requirements that make network management alike, but not identical, to management in hierarchies and markets. Since network management is not identical to management in hierarchies and markets, we suggest new terminology to be used in relation to network management. We adopt here the terminology used by Agranoff and McGuire (2001) and McGuire (2002, 2006); they identify network management as *framing*, *activating*, *mobilizing*, and *synthesizing*. Agranoff and McGuire's original presentation however lacks clarity, which is why we next we elaborate on the framework.

Framing. Framing in networks corresponds to planning in hierarchies, and answers to the first requirement of managing value-creating systems. This function can be defined as the managerial work on creating an understanding, or vision, about the value that the network creates and how the network may approach creating this value, and then communicating this understanding among the actors in the network. This is not a "planning" function, since no actor by itself can plan the value to be created; in contrast, creating this understanding is a mutual endeavor, a process of interaction and negotiation, among the actors. As Axelsson (1992, 2001) argues, in networks where firm-specific strategic planning is always bounded and influenced by the firm's exchange relationships, organizational as well as network-wide effectiveness is achieved ultimately

by (individually and mutually) framing the context of cooperation rather than by attempting to design or plan future patterns of activities. The actors may never fully grasp the "whole" understanding of the value to be created, so there will always remain competing and even contradictory visions of it. Nevertheless, there is a requirement for such a function as framing, since without this there can be no value creation; if there is no such understanding at all between any of the actors in a network, then there cannot be any activities towards any kind of mutual value creation.

Activating. Activating is the managerial work focusing on realizing the structure or the patterns of actors, activities and resources that are needed to create the targeted value. This activity answers to the second requirement of managing value-creating systems. Again, this is not simply "organizing", since organizing connotes the idea that an actor would be able to organize things through a direct, hierarchical control. Activating is rather the work of identifying the actors, resources and activities, and interacting and negotiating with the actors that possess the resources and capabilities to take on the activities needed for the value creation, with the ultimate goal that the actors will activate themselves as a part of the value-creating network.

Mobilizing. Whereas activating aims at activating actors, resources and activities in a network, mobilizing aims at energizing and building commitment among activated actors towards mutual value creation. Thus, if activating is about building structures and patterns, mobilizing is then about building commitment by communicating the value and goals of the network among the actors so that they realize the potential of the activated structural patterns. This corresponds to leading in hierarchies, where the work of leading aims at finding commitment from the people working in the organization. At the same time mobilizing is distinctively different from leading in hierarchies since no actor has the authoritative power to command other actors.

Synthesizing. Synthesizing is the managerial work that aims to follow-up and facilitate interaction patterns among the actors, resources and activities, so that the full potential of the network to create value is realized through measuring success in mutual value creation and facilitating interaction by detecting and removing its barriers. This again corresponds to controlling in hierarchies, relating to the fourth requirement of managing value-creating systems. Whereas hierarchical controlling aims at authorial controlling that the organization does what it is supposed to do, synthesizing in networks is manifested as a more negotiated processes of monitoring and facilitating network cooperation and its outcomes. There is, still, in networks a need to ensure and monitor the performance according to agreed objectives and standards. A clear understanding of the network performance and actor roles is a requirement for the management.

Our hypothesis is that in different types of networks we will witness different patterns of the four network management functions. In some networks, for instance, there will be more need to frame and activate, whereas in other networks there may be more need to mobilize actors and synthesize cooperation. In some networks common staff and planning systems may be key coordinating mechanisms of the network, whereas in others the key mechanism may be incentive and information systems. The patterns of network management functions and mechanisms are ultimately determined by the characteristics of the network (its size, maturity, uncertainty of future, etc).

Based on the idea that creating and absorbing new knowledge as well as changing the patterns of activities and resources is likely to be more important to rapidly developing and innovation networks than to more stable networks (Möller et al. 2005; Dhanaraj and Parkhe 2006), we tentatively suggest that framing, activating and mobilizing are more important to rapidly developing and innovation networks, and the more stable the network gets the more its management often focuses on synthesizing. As networks in this way focus on improving efficiency, they may later become rigid and less effective in answering to their customers' changing needs; if this happens they will need to re-invest in re-framing their value-creation. We thus suggest that in long term investments in the four network management functions need to be balanced.

5 Empirical study

The empirical part of this paper will describe two cases in the field of health and social care for the elderly. The purpose of this empirical study is to further develop our theoretically-driven network management framework. The first case study will describe an elderly home care network (Case Vantaa home care network) and the second one describes an innovation network developing interactive services for the elderly (Case Caring-TV). The research scope – elderly care networks – is determined by our research project funding. These two specific

elderly care network cases were selected based on a theoretical sampling; we aimed at gaining data on different types of networking, in this case of both stable and innovation networks which presumably are different in terms of network management. We also had a good access to both of the cases.

The case descriptions are based on interviews conducted with key persons (N=26 and N=19, respectively) involved in each of these networks. In addition, various kinds of documentary material such as internal memos, strategy documents, and brochures were used. For each of the cases we analyzed the material with two specific questions in mind. Firstly, we looked at what kind of management can be identified in the cases. Secondly, were tried to find out how framing, activating, mobilizing and/or synthesizing were needed in specific networking situations. This analysis provided us with a rich description of network management in terms of our theoretical framework. Next we will present the case study findings.

5.1 Case Vantaa home care network

The Vantaa home care network consists of mainly public sector actors providing heath and social care. The main division between the actors can be made according to the sector they belong to. The value-creation logic follows this division, even if the different organizations inside Vantaa municipality seem, to a certain degree, have different understanding of the value they are creating to the customers. Vantaa municipality represents public sector and has the legal responsibility to provide basic health and social care to its elderly. Third sector offers the elderly services all over Finland without being legally responsible for providing services. The fourth sector consists of close relatives of elderly, other relatives, neighbors, and volunteers.

The previously listed actors do not form the network that produces services for the elderly. Enduring relations between these sectors does not seem to exist, no working interactions between the sectors can be identified, and most importantly, there is does not seem to be common understanding of the value created to the elderly. The Vantaa home care for the elderly consist of municipal organizations in Vantaa and the fourth sector in the form of close relatives, and to some extend of volunteers. The latter part of this section describes the *current* value creation network.

Home care interactions can be divided into two; the interactions carried out by the nurses in the health care sector and the interactions carried out by the personnel in the social care organization. This case study concentrates on the health care interactions carried out by trained nurses. The customers are provided with basic health and medical care by trained nurses and other health care personnel. Home care service production has three scopes; physical, mental and social. Care takers of close relatives are also part of the home care network. The emphasis is on physical care while mental care is somewhat neglected. This is partly due to the lack of both economic and human resources, and also to the tendency not to produce integrated care where all aspects of wellbeing are taken into account. The care is reactive in nature.

The system is complex; the actors a customer may interact with are pictured in figure 1. Actors in the network are numerous, and the *actual* number of service providers is even higher, as pointed out earlier. The network actors are divided into five groups of actors according to the value or service they produce. 1) Katrina is a hospital which produces rehabilitative long term health care. 2) Peijas hospital provides its customers with acute, mainly short term care. 3) Health care centers are responsible for short term care for home care customers. 4) The home care actors, and 5) relatives, to some extend, aid the customers in their every day life.

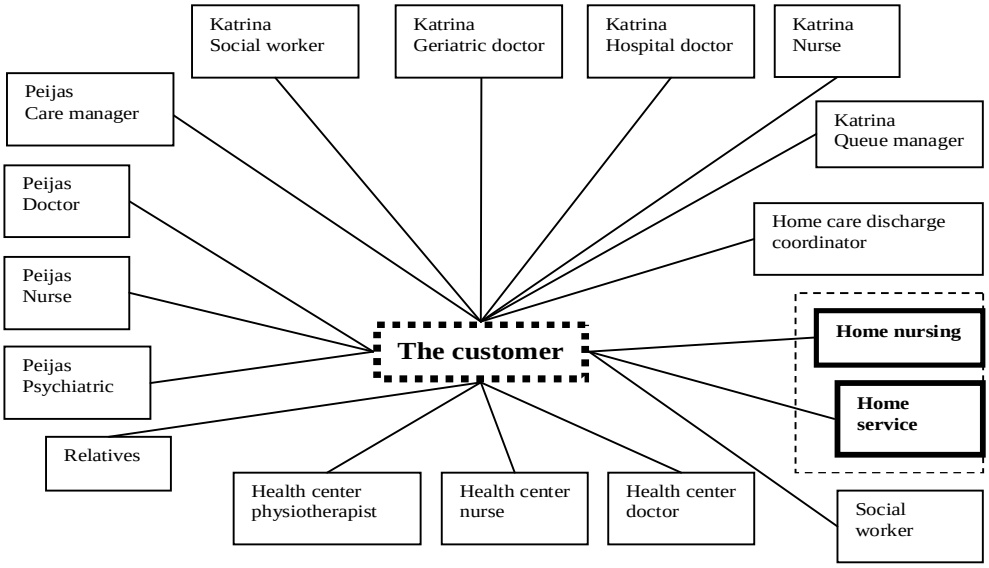

Figure 1. Vantaa home care network – actors from customer point of view

Several different networking situations can be identified in the home care. In this empirical case study we will concentrate on the situations where network actors interact in the care process. These interactions occur between 1) home care and health care centers, 2) home care and special care, 3) special and long term care units (Peijas and Katrina), 4) health care centers and special care, and 5) between home care and relatives. Different types of situations can again be identified inside the fore mentioned interactions. The most significant situations and interactions are reviewed according to the use of the four network management functions.

Starting the home care process

Regarding the care process, the very first interaction between different network actors occurs when an elderly is taken into home care system. *Framing* starts with a conceptualization of the customer's situation. The care plan is the tool for framing the care need. After mapping the situation, and assessing the elderly person's condition, the relatives' ability to help and assist, and the overall service need, the social worker together with both home service and home nursing personnel and a health center doctor prepares the personal care plan for the elderly person. These actors together agree on the care to be provided to the elderly. Framing is followed by *activating* the relevant care providers.

The care plan already *activates* the actors to jointly map the elderly condition and care need. The development of this care plan is included in the job tasks of home care and social care personnel, whereas the doctor is not specifically activated to perform this task together with home care as there are no appointed resources to take care of the home care patients. The health care doctors participate in the development as a part of their areal responsibility. The home care is facing some challenges in contacting the doctors and reserving their time to the care plan development. The lack of doctoral resources is still not only a network management challenge; the municipality of Vantaa is facing difficulties in filling in the vacancies of public health doctors in health center. Without additional resources in health care the mobilizing of doctors and other health care specialists to work together with home care and to see serving these customers as their mutual endeavor, is very challenging. Mobilizing should be done in order to get the actors to utilize and update the plan more efficiently

The close relatives of elderly are also included in developing the care plan when possible. Apart from the closest relatives, there tends to be only a few other relatives caring for the elderly. Willingness from municipality's part clearly exists to enclose relatives more to care of the elderly.

The personal care plan can be used in synthesizing the network's care process. Going back to the care plan together with all the relevant actors, would facilitate follow-up of the care. The elderly condition is also a good indicator of received care. There is a call for a shared data base of the elderly information, currently the medical or health care information does not reach home care or reaches them with a delay. The information transfer is even bigger concern to social care providers, who has their own separate data and is not allowed to know about the health condition of the elderly. However, social care is responsible of providing home care

personnel the social and financial aid they need. The care plan that is created for every patient together with home care and acute health care actors would be a good follow-up tool if used more effectively.

Providing acute health care services for home care customers

The relationship between acute health care, offered in health centers, and home care exists because health care expertise is needed for the elderly and home care organization does not employ any doctors. Home care personnel need help from doctors, physiotherapists, action therapists, and psychiatric nurses on a regular basis. The role of home nursing personnel in acute heath care is to contact health centers, reserve appointment times and renew prescriptions for the elderly.

This second challenge in the network is about coordination of care. There has not been *framing*, at least not to a sufficient degree, between health center actors and home care. Therefore, actors do not share an understanding about the created value for the customer/patient, because they have not assembled for a session to create a shared understanding of the value. The lack of framing also results in insuffiency in resources since without knowing each others needs and resources the actors do not cooperate and share their resources in a networked manner. Home care personnel are often forced to accompany the elderly person to the health center and wait for the appointment with them. This can take up to several hours in the home care personnel's already busy schedule. Changing this would require *activating* resources by redesigning job tasks of the home care personnel and finding other actors to accompany the customers to health care. Another activating function would be appointing home care doctors, but this would require framing between home care and health care managers in the municipality level. Information transfer between these two network actors is insufficient. By activating new resources, for example in the form of acute care team to home care unit, management would further enable coordination of care.

Health center doctors are responsible for describing prescriptions, writing referrals to other medical institutions, and mapping patient condition. Doctors can be considered as the bottle neck of health services that are offered in the health center for home nursing customers. Without activating doctoral resources to home care, the information flow should be enabled by mobilizing the existing resources. Contacting the health center doctor is often a struggle for home care personnel. When the doctor can not be reached, then neither the treatment nor medication can be changed even if the customer's condition would require that. Without shared goals and values, acute heath care personnel is not motivated to solve problems that currently are considered to be problems of home care. This is a question of framing and activating, as earlier described, but would also require *mobilizing* the actors to together solve customers' problems and to have motivation to help other actors in their efforts. A reward system could be used in mobilizing the actors to cooperate. In operational level, the care plan should be used as a tool to coordinate the care process between home and health care units.

Synthesizing is a network management function that provides the network with follow-up practices. The personal care plan should be revised systematically by all the relevant actors together and used as a follow-up tool. These management functions should be done in the highest possible level in the municipality and be embedded in the municipal health care strategy. Regular meetings between actors from home care and health care could help the network to follow-up the care process between home and acute health care, and, above all, would facilitate framing.

Referring the home care customers to special health care units

Legislation regulates special health care interactions and special health care's relationship with home care and other actors in the network. Peijas is a hospital that offers patients acute institutionalized and short term care. Surgical procedures are done in Peijas, and the rehabilitation is carried out in Katrina hospital. Inside Peijas is a psychiatric ward for mental patients. The special care actors in the Peijas hospital include special doctors and nurses, including psychiatric nurses and psychiatrists for mental patients. There is a care manager whose task is to coordinate patient traffic in and out of the hospital. Katrina is a rehabilitation hospital that offers acute short term care. The care periods in Katrina tend to be longer than those in Peijas. Peijas sends its patients to Katrina after operations if patient requires intensive care. From Peijas patients are sent to either Katrina rehabilitation hospital or their homes.

For home care, it has continuously been difficult to get their customers into special health care. The case is worst for mental care patients. Special health care is also lacking in geriatric knowhow. Special care is the strong actor in this relationship: Peijas sends patients home, and home care is obliged to accept all patients

sent to them. Special heath care organizations do not negotiate with home care on their strategic changes even if these changes directly affect home care. Peijas have personnel whose task is to help patients in discharge situations. Even so, home care personnel can get the information about the discharge from Peijas only couple of hours in advance. This places enormous stress on home care personnel, since it is their responsibility to take in all the customers. *Framing* function is again not done together by the relevant actors; in fact, it is done separately in all the different units by using hierarchical-type planning. At the municipality level there is not a shared strategy for these operations even though the customer/patient moves from actor to another. Without framing there is no shared understanding of the value creation which leads to several challenges in the other three network management functions. Eloquent patient intake from home care could be enabled if home care and special health care organizations had shared values and goals and a belief and willingness to produce services in a networked fashion.

The actors involved in the commencement of care and the discharge of patients are the Peijas care manager and the special doctor, the home nursing personnel, the home service personnel. The geriatric doctor in Katrina can also be involved, because there is no geriatric know-how in Peijas. In Katrina, the commencement of care is managed by a geriatric doctor, a hospital doctor, and the home nursing personnel. Like Peijas, Katrina also has a care coordinator, who, in Katrina, is called a queue manager. The queue manager in Katrina is involved in patient discharge to home care or Suopursu. In the acute health care offered in the health centers, the bottle neck was the doctor, whereas in special health care, the bottle neck is in the lack of care places in Katrina hospital and in other institutions. Katrina has a very limited number of places, and patients therefore have to stay in Peijas. Patients also stay in Katrina because there are no available places in the Vantaa elderly, nursing, or sheltered homes. These challenges in the network can be interpreted to be a result from the lack of framing between the different actors. All the relevant actors exist, integrating persons have been pointed and their jobs have been designed to include communicating to other actors. Thus, *activating* function can be identified, but *mobilizing* these integrating persons and other actor to work together around a patient is challenging without framing. The analysis revealed that the actors have a tendency to send the patients forward rather that see them as their concern. At the same time *synthesizing* is not facilitated with any network management mechanisms. Information flow between the actors is not facilitated by any data transfer mechanisms; in fact, the law prohibits home care and social workers from seeing health care data. This would place extra weight on working communication channels between the actors, but they do not exist. The queue manager from Katrina can contact the home care personnel only couple of hour before sending a patient back to home, where the patient becomes home care responsibility. Integrated databases and systematic care processes would enable information transfer and increase trust and responsibility for the patient in the network.

Type of situation	Framing	Activating	Mobilizing	Synthesizing
Starting the home care process Actors: Home care personnel, a social worker, health center doctor, close relatives	-The conceptualization of the elderly's situation -Creating mutual understanding of the care need and service production for the elderly -A social worker, home service and home nursing personnel and a health center doctor prepare a personal care plan -A personal care plan is used as a manegement tool	-The actors in home care, social care and other relevant fields are activated through the jointly developed care plan -Informing or involving the close relatives - Develpoing the care plan is includes in the job tasks of the home care personnel, and social caretakers	-The care plan is seen as part of the care and always done -MObilizing should be done in order to get the actors to utilize and update the plan more efficiently	-The care plan is used to monitor the care quality and its accordance to plans -The care plan is revisited regularly based on assesment of elderly's condition
Referring the home care customers to special health care units Actors: Home care personnel, Peijas and Katrina hospitals	-Different actors have different resources, they should communicate about their needs and resources. -Cooperation regulated by legislation	-A care manager already appointed to coordinate care to and from Peijas -- Geriatric know-how needed in Katrina hospital	-The Peijas care coordinar is not motivated to cooperate and communicate with home care -Katrina queue manager is also not motivated to communicate with home care -Without framing, the mobilizing of these actors is nearly impossible	-Not facilitated with any network management mechanisms -Law prohibits home care and social workers from seeing health care data, places pressure on creating working communication mechanisms and procedures
Providing health care services for home care customers Actors: Home care personnel and health center personnel	-Insufficient framing between the actors from different units -actors do not share an understanding about the created value for the customer/patient, because they have not assembled for a session to create a shared understanding of the value -- Lack of framing have resulted in insufficient resources and management mechanisms	-The managers could redesign job tasks of the home care personnel and seek other actors to accompany the customers to health care. -Appointing home care doctors and adding doctoral resources to home care would require reframing between home care and health care managers in municipality level -There is no resource base of doctors allocated directly to home care.	-Doctors themselves lack the resources to deal with large numbers of patients. -Without shared goals and values, acute heath care personnel is not motivated to solve problems that currently are considered to be problems of home care. -A reward system could motivate the cooperation between home care and acute care	-Need for a shared database and information sharing processes --Synthesizing would reguire the framing function and thus is not working now

Table 1. The four network management functions in Vantaa home care interaction

Suopursu socio-cultural service housing

The Suopursu socio-cultural service housing is part of the Vantaa health and social care service production network in Vantaa. Suopursu consists of rental apartments, daycare, and daycare center for the elderly. The cultural service is to produce musical acts, theatre small in-house film festivals, art exhibitions etc.

There are three levels of actors; micro, meso, and macro levels. The macro level consists of the communal politicians. The meso level actors are the managers in health and social welfare service, cultural services unit, and social and health care organization. These actors are not involved in the every day activities; they are not involved at the operational level of service production. Resources to the service production come from Health and social welfare services managers and are forwarded to Suopursu by managers in on the Cultural Services Unit and Social and Health Care Organization. The micro level actors, managers, the culture coordinator, the nursing staff, the kitchen personnel, and the inhabitants, are those who run the service production activities or are the receivers of service production. Relatives of inhabitants, third sector organizations and volunteers are involved in the service production to some extent, and there is a desire to enclose them tightly in the service production. The constructors of Suopursu were involved in the early phase of the development.

The case description of Suopursu is presented in two parts; the description starts from the development and will continue to the network management functions in the actual service production. The management functions in the case Suopursu are summarized in Table 2.

Type of situation	Framing	Activating	Mobilizing	Synthesizing
Suopursu socio-cultural service house development Actors: Managers, culture coordinator and inhabitants of Suopursu, Social and health care managers, cultural services managers and personnel	-Initiation of the network by two similarly thinking persons -Involvement and commitment from cultural services, social and health care organizations, health and social wellware services managers in giving support and agreeing on budget	-Building of the collaboration between actors from different units and inside Suopursu service house -Finding cultural service producers to produce musical acts, theatre, art achibitions etc. -Being able to make changes to the service house during the builbing process -Employing a cultural coordinator	-- Already existing relations to several cultural persons -Shared movitation and values to producing cultural services to elderly in a service house -Fyrther development possible becorse of the succees of the initial services, -increasing resources from cultural sector	-Continuous discussion with the inhabitant about the service needs conserning cultural services
Suopursu socio-cultural service production Actors: Managers, culture coordinator and inhabitants of Suopursu, Social and health care managers, cultural services managers and personnel, volunteers, third sector organizations,nursing and kitschen personnel	-Reframing the service production when the network was extended to other service houses in Vantaa municipality and to other customer groups	-Empowering the cultural coordinator to channel resources to cultural service production -Resoursing nursing personnels time to assisting in cultural service production	-Using negotiation and communication to enable cultural events on regular luch hours, committing kitchen personnel to facilitating service production -Using hierarchical power to get the nursing personnel motivated to cooperate in providing cultural servicesProducing a calender of all the events, reminding the inhabitnats about current events -Aiding the inhabitants to participate	-Organizing the events and providing the cultural service providers with easy access to Suopursu -Solving interpersonal and interest conflicts

Table 2. The four network management functions in Suopursu socio-cultural service house

The development of Suopursu

This network was initiated by two persons working in Vantaa. Even though the incorporation of cultural services into activities of sheltered home was written in Vantaa social and health care organizations strategy, the encounter of these two people with similar ideology and values can be considered as the starting point. Their common understanding of service requirements of elderly and their drive led to the strong cooperation of these two persons working in different organizations, a service unit for elderly and a disabled and cultural service unit. Net initiation was enabled by a social event. Communication disclosed these persons shared values, goals and belief in networked service production and value creation. Their first network management tasks were to create a shared understanding and vision about the value that will be created in the socio-cultural net of Suopursu. The actions of these two persons can be counted as *framing* the service production.

After framing the service need and value creation together, they engaged the managers of cultural and health and social care units and framed the service production suitable for both units' strategies. At his point the actors *activated* though resourcing the service development financially. They both enjoyed full support from

their managers in respective organizations: the Cultural Services Unit and Social and the Health Care Organization. Under these conditions, budget negotiations went without a problem. A suitable house was under construction and given to the project. Since the house was already under construction and originally designed for other kind of purpose, the initiating actors had to interact and negotiate with the constructors about the changed needs. This activating function was followed by *mobilizing* the actors to change the already agreed plans. This succeeded only partially, the builders agreed to do some changes with a substantial extra cost, but some of the changes had to be made by the service developers themselves. They, for example painted the wall in different colors to suit the needs of dementia patients better.

After framing the service first together and then with relevant managers, finding economic resources, and the physical premises for the house, the actors started to look for the cultural service providers. In activating these actors their existing connections to cultural influencers enabled the service production at the beginning. A cultural coordinator was also employed to the house. Mobilizing the cultural service producers to volunteer was an easy task from the beginning. At first, the producers were engaged through friendship and other earlier connections, later the service producers started to connect Suopursu and ask for an opportunity to perform there. In relatively small art circles of Finland the positive word spread. At the development phase there were no separate synthesizing procedures, the inhabitants and cultural service producers participated keenly, and this was seen as a positive feedback. The inhabitants were allowed to give suggestions on what kind of cultural services they would like to experience.

In Suopursu, the innovative way to produce services to the elderly living in a sheltered home is being considered so that it can be extended to include elderly people living in the surroundings of Suopursu. Several challenges can be identified in incorporating the local elderly into these services. First of all, information sharing among the local elderly is a challenging task (activating). The second challenge is to motivate them to appear in the sheltered house (Mobilizing). Third is the challenge of getting the often physically challenged elderly to Suopursu even if they feel motivated and are willing to come there (Synthesizing). One innovative way to answer to these challenges could be to incorporate relatives and volunteers into this service production net. Extending the network and customer base and solving the mentioned challenges should start from reframing the service need and value creation. After framing the other functions would be enabled.

Producing the socio-cultural service in Suopursu

The development phase had little vicissitudes and management functions after successful framing were relatively easy. In producing the actual service the network management functions activating, mobilizing, and synthesizing played a crucial role. After the initial framing of the value creation first between the initiating persons, then between those persons and managers of cultural and health and social care units, there was no framing inside the Suopursu. The managers failed to *frame* the service with the nursing personnel working. This resulted in conflicts in the service production and placed pressure to activating and mobilizing function.

Care personnel are in charge of helping the elderly to participate in the events and activities held in the Suopursu, but this, according to the care personnel, is not part of their job tasks. This challenge was solved by the Suopursu managers by hierarchical control, and the nursing personnel were ordered to participate in the socio-cultural service production. Managers made it clear that socio-cultural activities are part of care personnel's job description. In the absence of a shared value base, the managers were forced to use hierarchical control to persuade care personnel to add to their normal customary job tasks. After a difficult beginning, the cooperation between the cultural person, the cultural service providers, and the care personnel has been smooth. Without proper framing the nursing personnel did not engage themselves in the cultural service production voluntarily. Neither was the nursing personnel communicated or negotiated about their job design before hand. Kitchen staff on the other hand was very cooperative and willing to change their own schedules to enable performances during normal lunch time.

As mentioned in the development description, engaging the cultural service produces was easy. Eventually, the job of cultural coordinator changed from searching appropriate performers and artist to choosing and coordinating the volunteers. The service production synthesizing is done by removing barriers from participation to events. This is done by helping the inhabitants to come down from their apartments to the shared space where events are held. There is also a calendar with all the coming events, which is delivered to all the inhabitants. Synthesizing includes a follow-up of the service production and facilitation of interaction between partners. The facilitator in this case is the cultural coordinator, who chooses performers for the

sheltered home and facilitates service production, detecting and removing barriers to it, such as overlapping schedules.

Conclusions regarding the Vantaa home care network case

The Vantaa home care network is lacking resources in home care and especially in acute health care. There is no pointed doctor in health care center to take responsibility of home care customers acute health and medical care issues. This result in long waiting times and frustration in home care scarce time resources are wasted in trying to contact a doctor. These facts define the management challenges in the network.

In this home care network the framing function is not evident and identifiable to a certain period of time in the network lifeline. Without continuous and visible framing the other three network management functions are challenging. This difficulty seems to be most evident in mobilizing the actors to mutual value production. Since there is no mutual understanding of the value, there ability of managers to motivate the actors to produce this value together is practically nonexistent. This was evident in the Vantaa home care network interactions where home care and special health care actors were transferring a customer/patient between from one to another. There were even appointed integrating persons, but these persons were not motivated to communicate with home care. Instead, they continually challenged the flexibility of home care by sending them patients on a short notice. In short, the need for integrating persons was acknowledged by the management, some resources were activated, but the actors were never successfully mobilized to use the resources and communicate with each other. Also, we were not able to identify practical and usable management mechanisms to facilitate synthesizing. A personal health care plan that was done to all the patients by actors from different units could have facilitated the follow-up of the care the elderly receive.

5.2 Case Caring-TV

The Caring-TV case presents a network that develops interactive, technology-based wellbeing services to elderly people living at home. The network consists of various actors operating in Southern Finland that have different roles in the making the Caring-TV a reality. There are three key actors in the network. The first is Laurea University of Applied Sciences, who has the responsibility of studying and developing the service concept. The second is TDC Song, which is a telecommunications company responsible for the technological platform. The third is Espoo city, which has the role of a customer for the Caring-TV. Other actors in the network are funding agencies, collaborating cities, and partner companies. The Caring-TV development network is embedded in a larger network build around an innovation center called Well Life Center (WLC), located in Espoo, Finland.

This case description is based on interview material collected during the first half of the year 2007 from 19 different participants of the Caring-TV network. In addition, we have collected and analyzed various types of documentary material such as project brochures and research reports. The case networks (Caring-TV and WLC) have evolved through a series of different networking situations or stages; these will be described next.

Stage 1: Development of the Well Life Center idea

The first seeds of the Caring-TV concept development are related to the development of the Well Life Center, which is an innovation environment located in Espoo, Finland. The development and initiation of WLC was crucial to the realization of the Caring-TV project as it brought together the key players of the project. At first, the Well Life Center was in an idea development phase. Three key players discussed its future: Laurea, Espoo city and Culminatum. Culminatum is a strategic development company of the Southern Finland region owned by multiple public and private organizations. TDC Song was not yet part of the network at this early stage.

A number of enabling factors that eventually led to the establishment of WLC. A key development driver was the national strategy and legislation concerning Finnish applied universities. They emphasized the "third role" of applied universities, namely their role in regional development. Laurea was keen to adopt this regional development role and started to develop its strategy and teaching curriculum accordingly. Another key factor was that one of Laurea's experts, who later became the head of Laurea WLC, had made research on creating professional knowledge and, based on this research, had already started planning the WLC concept. This concept emphasized the role of bringing together a regional network of public, private and third sector actors, including students, researchers, teachers, for-profit companies and municipalities.

The city of Espoo, in turn, had a strategy to build a health and social care cluster in the area of Otaniemi, located in Espoo. This commitment enabled Espoo's investments and support to the construction of WLC. Espoo's strategy coincided well with Laurea's ideas on WLC conceptualization, and this way Laurea and Espoo had mutual framing on the need and goals for the forthcoming Well Life Center.

A third crucial factor was Southern Finland (Uusimaa) region's innovation strategy, which emphasized the importance of creating a strong health and social care cluster within the region. This strategy was being implemented by Culminatum, the development company owned by the Southern Finland Regional Council, the cities of Helsinki, Espoo and Vantaa, and some of the universities, polytechnics, research institutions and business communities in the Uusimaa region. Culminatum thus took part in developing WLC. Culminatum also started to build a regional network of health and social care innovators (universities, firms, etc), known as the Cluster-in-Motion project, that later started holding monthly networking seminars in the premises of WLC. Laurea, Espoo city, and Culminatum thus had a mutual framing concerning the WLC idea. The activation and mobilization of their mutual network was based on trust-based connections at a personal level; the key persons knew each other well. Coincidentally, as soon as the WLC concept had been created, a large building in a central location in Otaniemi became empty; this building was identified as an ideal location for the WLC center. The activation of this resource naturally required financing and other negotiations, but the existing mutual framing between the key partners paved way for these negotiations. No specific monitoring (i.e. synthesizing) tools were established at this time for this network; rather the key persons continuously monitored the WLC progress through their personal networking.

Stage 2: Starting the WLC operations

As soon as the WLC was launched at its new location in Otaniemi, Espoo, teachers and students came in and WLC staff started to recruit tenants (companies, universities and other potential partners). Culminatum also started holding the Cluster-in-Motion seminars in the center, and Espoo and other cities started to build collaboration with WLC and its tenants. TDC Song became an active visitor to WLC, especially through the Cluster-in-Motion seminars. The number of actors thus grew rapidly. Laurea has also other locations where it has operations, so we refer to the part of Laurea that operates inside the Well Life Center as Laurea WLC.

One of the key challenges in starting the operations in WLC was that it has been fairly challenging to get all the teachers and students to fully engage in working, teaching and studying in the center. Activating teachers was based on their existing employment contracts with Laurea, and activating students proceeded according to Laurea's normal student recruitment processes. This is partly because the WLC concept represents quite a new style of teaching and studying, especially because of its regional development role. This was partly a framing issue, partly a mobilization issue, and these related to each other. In terms of framing, the teachers and students either had not accepted or did not understand the new type of working and the resulting new teaching curriculum. In terms of mobilizing, the teachers and students were not committed to working in the new style. These challenges were overcome by giving teachers and students time to reorient themselves to the new style of working. They were also re-orientated for the new situation through education and continuous discussions. This has gradually increased their commitment.

Recruiting good partner companies to become WLC tenants proved also a challenge to Laurea. WLC was not meant for everyone; rather, it sought partner companies willing to invest actively in multi-party cooperation with Laurea WLC, with the students, and with the other tenants. The companies should also share values with the WLC concept, including R&D ideology, customer-oriented thinking, and ethical perspectives. In other words, a mutual framing was a pre-requirement for new tenants. New tenants were activated through personal selling to Laurea's pre-existing partners. In some cases there were, however, challenges in getting companies to move to WLC. For instance, one challenge was that some firms' earlier commitments (i.e. earlier tenancy agreements) prevented the move to WLC. Mobilization of such tenants would have needed e.g. rewards by Laurea, but these were not used. Synthesizing feedback from the teachers, students and tenants is gathered mostly through informal discussion and regular meetings.

Stage 3: Caring-TV core network (Laurea, TDC, Espoo)

The WLC center as such enabled the beginning of the Caring-TV development. The development of the Caring-TV concept was framed, activated and mobilized by three key players: Laurea WLC, Espoo city and

especially its elderly services unit, and TDC Song. We refer to the network between these three key players as the "core network" of Caring-TV development (see figure ZZ).

There were a number of enabling factors that eventually led to starting the Caring-TV development. From the viewpoint of Laurea, a key enabling factor was that Laurea WLC people had intrinsic commitment towards developing new, innovative services for elderly people. Another key enabler was that Culminatum organized the Cluster-in-Motion seminars held in the WLC building; these seminars brought relevant actors together under one roof. This way the WLC building acted as a place, a "ba", where networks can mingle productively. Laurea and TDC Song eventually met at the seminars and started discussions with each other. They realized that they had mutual interests in developing an interactive television services for elderly living at home. TDC Song had the technology, and Laurea had R&D and content production resources.

TDC Song had business strategy emphasizing its role as an active development partner for its customers. TDC Song had also a service contract with Espoo to provide telecommunication services; this contract stipulated that TDC should not only provide telecommunications services to Espoo but also develop value-adding technology-based services for Espoo. These enabling factors framed the discussions between Espoo and TDC Song and kept them committed towards finding common ground. Laurea and TDC discussed separately and autonomously with Espoo, and eventually they combined their interests and together recruited Espoo as a customer for the Caring-TV.

One major challenge in the core network was that Laurea, Espoo and TDC are different types of organizations. Laurea's goal is to provide high quality R&D, teaching, and regional development. Espoo seeks to provide good quality services for its elderly. And TDC seeks for-profit service development. Additionally, they have different working processes and cultures; TDC for instance wanted commercialization of the Caring-TV quickly, whereas Espoo and Laurea wanted to invest more time for testing and development. These are framing issues, which were resolved by the core network through discussions and a decision to focus on a mutual value: bringing value to end-customers, i.e. the elderly. No specific feedback systems were adopted by the core network, but the network monitored its progress through regular informal and semi-formal meetings. Some unexpected challenges, such as early media coverage of the Caring-TV organized by TDC that backfired on the whole network, were identified and resolved ad-hoc through these meetings.

Stage 4: The first Caring-TV project (Coping-at-Home)

The realization of the first Caring-TV project could not, however, be handled solely by the core network. External resources such as funding and technological and service competences were required. Therefore, activation of a network of resources was required. Firstly, the core network needed funding, for which it turned to Tekes, the national innovation funding agency in Finland. Funding was applied for a joint project that had several partners, including Laurea's other units (Leppävaara and Tikkurila), Helsinki School of Economics (HSE), Stadia polytechnics, and several potential partner companies (see figure 2).

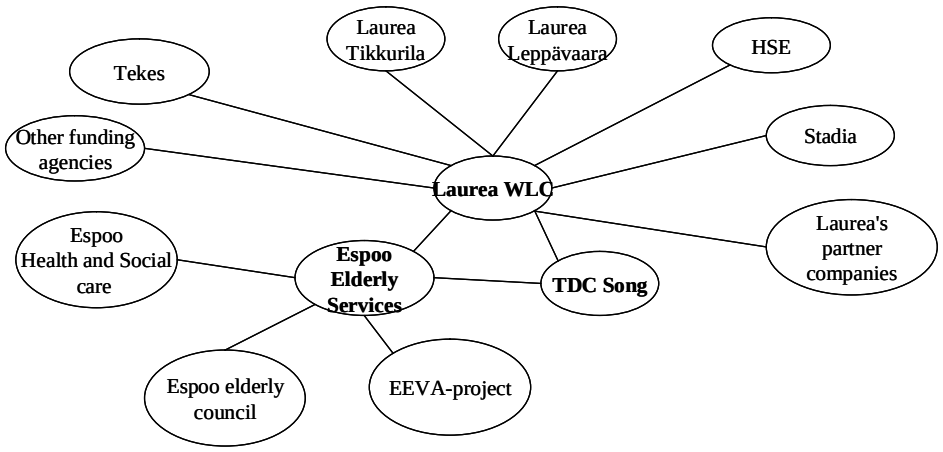

Figure 2: Coping-at-Home project network before Tekes's funding decision.

The funding negotiations with Tekes started well; Tekes and the actors seemed to have mutual framing on the goals of the R&D project. The negotiator from Tekes, responsible for the preparations of the final funding decision, gave an anticipatory acceptance for funding the project. However, at the last stages of the funding process the person acting as the negotiator from Tekes was changed. The new negotiator did not agree with the project framing, and started to dismantle the project network, thus de-activating many of the actors of the network. Eventually, through tough negotiations, Laurea WLC's project, named "Coping-at-Home", was the only organization to actually get funding from Tekes. Stadia eventually withdrew from the project. HSE continued as a minor partner with its own funding. TDC had applied for its own, company funding from Tekes, but was denied the funding; however it was committed to continue the project with its own funding. The funding process thus had a strong impact on the framing and activation of project.

The other company partners, besides TDC Song, became recruited to the project by Laurea, which was able to sell the idea of the project to firms that were already tenants of WLC and thus already had accepted the WLC overall collaborative framing. However, some of the partner firms did not understand and/or accept the Caring-TV project framing; in particular they did not see the concrete benefits of participating. However, they decided to join in because they shared the overall WLC collaborative idea, and it helped that the required investments in the project were fairly low (i.e. risks for participation were low). Monitoring the progress of the Caring-TV project was more organized than networking at the previous stages. Tight monitoring was required by the Tekes project contract, which stipulated for example that the project should have a clear project organization with clear roles and responsibilities. A project steering group, for instance, was set up, and an R&D reporting plan was made. These made the monitoring of the network more controlled.

Stage 5: Project network expands: Coping-at-Home 1, Coping-at-Home 2 and Kotiin projects

After the first Coping-at-Home project, new projects called Coping-at-Home 2 and Kotiin ("To Home" in English) have been started. The core network is still the same, but project participants in these new projects are not all the same. In Coping-at-Home 1 and 2 the main participants have been Laurea WLC, Espoo elderly services, TDC song, Videra, Tekes, some other partner companies, and elderly and family caregivers as the target group. In the Kotiin project the network has expanded so that there are several new partner cities (Vantaa, Lappeenranta, etc), new partner companies, new target groups (e.g. service housing clients), and InnoElli Senior as the funding partner. In fact, Espoo elderly services unit is *not* a major partner of the Kotiin project; it has only a minor participant role in this particular project.

The new project members to each project have been recruited through personal selling via both direct partnerships (existing Laurea's partners) and indirect networks (e.g. the funding agencies' contact networks). Key framing decisions regarding the goals of each project have been done by the core network (excluding Espoo in the Kotiin project), but each new partner has had some incfluence in their respective projects; for instance target groups (i.e. end-clients) of the projects have evolved through discussions with these new partners. Not every partner has been completely satisfied with the framing of the projects. Some partners for istance have felt that they do not receive enough concrete benefits from the participation. This has had a negative influence on the mobilization of some of the partners, but they have however remained project participants since they had originally undersigned the project contracts.

All of the projects have suffered from continuous technological problems: the interactive television technology has not worked as promised and expected. For instance, sometimes the end-customers and TV-program producers have not been able to see or hear each other, or the TV sets at the end-customers' homes have not operated at all. These technological challenges have neen continuously monitored by the technological partners (TDC and Videra) and resolved by fixing the specific operative technological technologies.

Some partners have also felt a lack of mutuality; they have for instance felt as being "left out" from decision making. This accompanied with the technological problems have frustrated some partners. The lack of mutuality and frustration has been partly resolved by Laurea, who has continuously, and based on the project plan, gathered evidence of the progress and success of the project. This evidence has convinced many of the partners that they should continue their participation. Partly these problems have been resolved also by improving information exchange and feedback gathering through establishing two boundary spanner positions (jointly employed by Laurea/TDC and Laurea/Espoo), regular meetings and email bulletins.

The five network development stages and the required management functions have been summarized in Table 3.

	Framing	Activating	Mobilizing	Synthesizing
Stage 1: Development of the Well Life Center idea. *Actors:* Laurea, Espoo, Culminatum	Enabling factors: - Pre-existing mutual agenda bsaed on regional development → acceptance and understanding of the idea of WLC by all actors	Enabling factors: - Personal trust-based network already existed - A building suitable for WLC coincidentally became free	Enabling factors: - All actors had *intrinsic* commitment to collaborate	- Continuous informal monitoring through personal connections between the key persons
Stage 2: Starting the operations of Well Life Center. *Actors:* Teachers, students and tenant firms as new actors, Laurea and Espoo as old actors	- Teachers and students re-framed through education, discussions, and new curriculum - Only those tenant firms were recruited who already held the correct framing	- Teachers were activated based on their employee contracts with Laurea - Students were recruited via normal student recruitment processes - Tenant firms were recruited through personal selling via pre-existing partnerships	- Teachers' and students' commitment achieved through education and discussion - Tenant firms had pre-existing commitment to long-term collaboration with Laurea - Some committed tenants not successfully mobilized due to their other non-reversible commitments	- Feedback collected mainly through informal discussions and meetings
Stage 3: Caring-TV core network. *Actors:* Laurea, TDC, Espoo	- Laurea and Espoo had pre-existing mutual framing - Dissimilar framing between TDC and and Laurea/Espoo on profit-making, commercialization, and working processes; managed by framing the collaboration on end-customer value	- Laurea and TDC intrinsically and autonomously activated as innovators - Laurea and TDC separately negotiated with Espoo to start collaboration; thus activating Espoo - Activation of the linkage between Laurea and TDC enabled by the WLC as a meeting/seminar place ("ba")	- Laurea, Espoo and TDC all had *intrinsic* motivation to collaborate	- Feedback continuously exchanged in person-to-person discussions and meetings - Unexpected challenges were identified and resolved ad-hoc
Stage 4: The first Caring-TV project (Coping-at-Home). *Actors:* Multiple new actors joined in the network.	- Key framing decisions already made by the Caring-TV core network - New partners recruited based on willingness to follow existing framing - Some new partners accepted the overall framing of WLC but not the framing of Caring-TV; this had negative influence the mobilization of these partners	- Suitable partners were recruited through pre-existing networks - Applying for funding was crucial; Tekes's funding program was an enabler, but the funding process also changed the structure of the network → little effect on the core network, but drastic effects on project network as a whole	- The core network was intrinsically highly committed - Some partners were less committed because they did not share the Caring-TV project framing, although they shared the overall framing of long-term WLC collaboration - Low risks of participating made it easy for firms to make decision to join	- Project contract stipulated that project progress was monitored; also a project organization with clear roles (e.g. executive group) and responsibilities was set up - Regular monitoring through project meetings and reporting began
Stage 5: Coping-at-Home 1, Coping-at-Home 2 and Kotiin project networks. *Actors:* Multiple new actors joined in the network.	- Key framing decisions already made by the Caring-TV core network - Some mutual re-framing for each new project with new partners - Some non-mutual expectations of concrete remained; this had negative impact on the mobilization of some partners	- New project members recruited through personal selling via both direct and indirect networks - All projects continuously suffered technological problems → these were resolved through fixing some operative resources (technologies) - Two boundary spanning persons were jointly employed by the core network to facilitate information flows among the network	- Some non-mutual expectations of concrete project benefits kept some project partners less committed → still decided to continue because they had signed the project contract - Some partners were frustrated with the technological problems → were re-mobilized through offering evidence of the project success - Some partners felt lack of mutuality, which decreased their commitment → resolved with regular meetings, email bulletins and boundary spanners	- Continuous monitoring and resolving of technological proglems by the technology partners (TDC and Videra) - Gathering of evidence of project success according to the R&D plan - Feedback exchanged through regular meetings, email bulletins and two boundary spanning persons

Table 3: Summary of network management functions in the Well Life Center case.

Conclusions regarding the Caring-TV case

We can make several conclusions on network management in the Caring-TV case. A key finding is that all four network management functions have been present at each stage. Another key finding is that each stage is different in terms of their managerial requirements. In Stage 1 the framing, activating and mobilizing of the network have been based on *enabling* factors, i.e. contextual factors that have facilitated the emergence of the network. In Stage 2 the framing of the WLC was more or less complete, and the emphasis was more on activating and mobilizing the network, especially the teachers, students and tenant firms. Synthesizing of the network in stages 1 and 2 was handled rather informally, through continuous discussions among the actors. In later stages (Stages 3-5) of the network development the core network, consisting of three key partners of the network (Laurea, Espoo city and TDC song), took a frame-setting role, while other actors were recruited based on their willingness to accept the pre-existing framing. Laurea had the responsibility of R&D progress as a whole and activating new project partners, while Espoo city had a customer role and TDC was responsible for technological issues. In Stages 4-5 the monitoring of the projects was more formal than in the previous stages, because the contracts with the funding agencies required tighter monitoring and formal project organizations.

Funding played a large functional role in the different stages of the network development. In Stage 1, for instance, Espoo, Laurea and Culminatum made investments in developing the WLC. In stages 4 and 5 the funding processes influenced the activation of the network. In Stage 4 Tekes practically molded the project network drastically, and in Stage 5 InnoElli Senior influenced the project network since the new project partners were partly found via it.

6 Conclusions and discussion

In this paper we focused on building a framework of basic network management functions. Based on a literature review we proposed a framework built on four functions: framing, activating, mobilizing and synthesizing. We elaborated on the framework through a case study of two different networks: one that is a more mature network concentrating on service production and one that is a recently created innovation network. The first case − Vantaa home care network − concerns mostly home care service production for the elderly, but it includes also a sub network which is created to produce socio-cultural services for the elderly living in a service house. In the home care service production network we selected several different networking situations with their particular management challenges for a detailed analysis. In the sub-case we identified and analyzed two stages of operation: the development of the socio-cultural service, and then the actual service production. The second case − Caring-TV − concerns an innovation network that develops interactive television-based services for elderly living at home. In this case we identified and analyzed five different network development stages.

Our study findings support at least three theoretical conclusions. The first finding is that all of the four management functions were required in every situation and/or stage of networking in both of our studied cases. For instance, in the Vantaa home care network all the four network management functions were identifiable in both home care service production and socio-cultural service development. Service production, for instance, involved different kind of activating than development, and framing on the network goals was different in the two cases. In the Caring-TV case, framing, for instance, was established during the first two phases, but was not a managerial focus in the later stages; however, it was an enabling factor also in the later stages and without it the network successfulness would most likely have declined. This indicates that the four management functions are basic, i.e. required, in networks – at least in these studied cases. However, although all of the functions, or at least a need for all of them, were identified in all of the studied situations/stages of our cases, we need further studies to demonstrate if this claim is generally applicable in all kinds of networks.

Secondly, and more importantly, we identified different ways in which the four management functions manifested in the different networking situations/stages. For instance, in the Caring-TV case, activation was realized not only through active partner recruitment by Laurea, but also through e.g. funding negotiations with funding agencies. If we compare our two cases, in the Vantaa home care case framing was not evidently identifiable as a stage but as a continuous challenge for the network, whereas in the Caring-TV case framing was mostly set in the first two networking stages and was considered given in the later stages. It thus seems that there are many possible ways in which the required functions can be manifested in different networks and/or networking situations/stages. This means that although there four basic requirements of management are

common to different types of networks, there are contingencies that determine the way management actually manifests in each network. In this study we witnessed different manifestations between stable and innovation networks, but other contingencies such as network size, centrality etc. should also be considered in future studies.

Finally, we found interplay between the four functions in many of the networking situations that we studied. For instance, in the home care network the evidently insufficient framing between home care and health care seemed to result in challenges regarding the mobilization of the actors. It also seemed that activating the resources for networked service production did not enable actor motivation, this being a mobilizing function, without consistent framing between these actors. As a further example, systematic monitoring of technological problems, i.e. synthesizing, in the Caring-TV case prompted changes in the resource patterns of the network, thus having an influence on the activation task. These findings indicate that the four management functions are mutually inter-independent and need to be coordinated. Further research is required to map out possible functional inter-dependencies.

Further research is needed to extend and validate our findings. This can be done, for instance, through empirically investigating a greater number of different types of network to find out how general the four network management functions are, what their usual manifestations are, how they are inter-dependent, and what kind of contingencies give rise to certain types of management.

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