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UNIVERSITY OF VAASA

SARI SLAWUTA

Value Network Analysis in the Public Sector.

Case study on how vitality is created in the
Kajaanin Kampus 2025 project.

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Author:	SARI SLAWUTA		
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TIIVISTELMÄ:

Yhteiskunnat verkostoituvat enenevässä määrin. Yhä merkittävämpää roolia yhteiskunnassamme näyttelevät toisiinsa liittyvät poliittiset, taloudelliset ja sosiaaliset verkostot. Kuntasektori on myös siirtynyt kohti verkostoyhteiskuntaa, jossa verkostojen suhteet, niiden erilaiset määritteet ja niiden hallinta ovat keskeisiä. Alueiden välinen kilpailu asukkaista, yritysinvestoinneista ja julkisista investoinneista on kiristynyt. Väestön ja talouden kasvu on keskittynyt yhä enemmän suuriin kaupunkeihin ja niiden läheisyyteen. Samaan aikaan kaupunkikeskusten ulkopuoliset alueet ovat menettäneet väestöään. Muuttoliike on pitkään koostunut nuorista aikuisista, jotka muuttavat suuriin kaupunkeihin. Tämän myötä muuttotappioalueiden väestö vähenee ja ikääntyy. Kunnan elinvoimaisuus riippuu siitä, kuinka houkuttelevaksi sen asukkaat, yritykset, työntekijät ja turistit sen kokevat. Tämän tapaustutkimuksen kohteena on vuonna 2023 alkanut Kajaanin Kampus 2025 -projekti, jonka tavoitteena on kehittää Kajaanin koulutuskeskuksesta alueen oma Silicon Valley, joka vetää puoleensa opiskelijoita, asiantuntijoita ja yrityksiä. Tämä tapaustutkimus tarjoaa yhden näkökulman siihen, miten julkisen ja yksityisen sektorin rajapinnassa olevat arvoverkostot voivat luoda arvoa yhdessä. Tutkimuksen tarkoituksena on selvittää, miten kampus hankkeen strateginen arvoverkosto tuottaa elinvoimaa. Tämä tarjoaa merkittävän näkökulman paikallisen ja alueellisen elinvoiman kehittämiseen. Tutkimusaineisto kerättiin lähettämällä online-kysely Kampus hankkeen johtoryhmän jäsenille täytettäväksi. Lisäksi heitä haastateltiin. Kyselyn ja haastattelujen perusteella Arvoverkostokartalle sijoitettiin kaikkiaan 38 roolia, jotka yhteensä tuottivat yhteensä 144 suoritetta. Nämä suoritteet myös taulukoitiin ja ryhmiteltiin suoritteiden tavoitteen ja mahdollisen vaikutuksen perusteella kuuden elinvoimakomponenttien alle. Arvoverkostokarttaa haluttiin tarkastella kolmiulotteisesti yhdistämällä kaksiulotteinen arvoverkostokartta julkisen arvon ekosysteemimalliin. Tämä malli rakennettiin teorian pohjalta ja juuri tätä tutkimusta varten. Yhdessä nämä mallit luovat tutkimuksen viitekehyksen ja tuovat enemmän syvyyttä arvoverkostoanalyysin tulosten analysointiin. Kartan kolmiulotteinen mallintaminen osoittautui arvioitua haastavammaksi eikä toteutunut odotetusti. Tutkimus kuitenkin osoittaa, miten hanketta varten luotu arvoverkosto tuottaa elinvoimaa alueelle. Tämä tutkimus tarjoaa näkemyksiä paikalliseen kehittämiseen sekä organisaatioiden kehittämiseen. Se tarjoaa tapausesimerkin arvoverkkoanalyysin käytöstä julkisella sektorilla. Se toimii myös esimerkkinä, kuinka Alleen arvoverkkoanalyysi sopii julkisen sektorin arvoverkoston ja sen tuottaman elinvoiman analysointiin.

KEYWORDS: Value network analysis, value networks, network, networks, net, ecosystem, ecosystems, regional development, vitality, public sector, public value, strategy, vitality policy, elinvoima, public value ecosystem model

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Abbreviations

1 Introduction

The development of cooperative relationships towards strategic networks began in the 1970s from the supplier relationships of production-oriented companies. (Möller et al., 2004) These companies strive to include the value functions of their entire industry as part of the strategic network they lead. These are also called demand-supply networks. With internationalization, many companies have had to expand their network cooperation to include new distribution channels and market cooperation companies. (Möller et al., 2004). In strategic management in the 1990s, networking was brought up alongside planning in all strategic development activities, and quite often, networks have been seen as some symbol of good cooperation. (Mustikkamäki & Sotarauta, 2001). In the 1990s, the network became the leading operating principle of development activities. The network is not a new designation for collaboration, even though the operation is based on cooperation. In networks, the importance of reciprocal and non-hierarchical interaction relationships is increasing, and the interdependence of actors has increased. (Linnamaa & Sotarauta, 2001). Competitive strength is sought from networks, and networking is seen as a necessity for companies. (Möller et al., 2004) The benefits that the companies and organizations get from the network can be based on financial, operational, or technological benefits or their combinations. By combining resources, the organization can also get opportunities to expand its market area and market power and develop business processes and offerings. (Möller et al., 2004). The network perspective emphasizes the transition of competition between companies to competition between networks (Hakanen et al., 2007)

Societies are also becoming more widely networked. Interrelated and overlapping political, economic, and social networks play an increasingly significant role in the functioning of society. (Möller et al., 2004). The municipal sector has also moved towards a network society, where network relationships and their definition and management are central. Competition between regions for residents, business investments, and public

investments has intensified. Population and economic growth have focused more on large urban areas than before. At the same time, the area outside the metropolitan areas has lost its population. The migration mainstream has long consisted of young adults moving to big cities. The population of migration loss areas is decreasing and getting older. (Donner-Amnell, 2020). In the Finnish language, the words "kilpailukyky" (competitiveness) and "hyvinvointi" (wellbeing) usually describe social and public success. There is no corresponding word in English to "elinvoima," but the phrases vitality and viability are used for the same thing (Ravenscroft, 2000). Vitality as a concept came into use in 2009 when Baldauf (2010) suggested that a more descriptive concept was needed to simultaneously describe and examine the nation's potential from the perspective of economic growth, social functioning, and individual life. (Baldauf, 2010). To strengthen their vitality, the municipalities must recognize environmental changes, adapt, and develop their operations. If necessary, the municipalities must introduce new processes and activate municipal residents, companies, working communities of the municipalities, various industries, and other stakeholders for cooperation. (Sallinen, 2017)

However, vitality as a value and concept is vague but widely used at the regional and municipal levels. According to Onkamo (2017), vitality refers to almost any task of the municipality, and it has been used in different municipalities in different contexts. Paananen et al. (2014) also consider the concept of vitality to be abstract as it changes in other contexts. However, they find it very useful precisely because of it. (Paananen et al., 2014). According to Sallinen (2017), the vitality of a municipality depends on how attractive its residents, companies, employees, and tourists find it. Sallinen (2017) lists the components of vitality. Those components are a beautiful environment, a competitive business base, Competence and labor availability, public and commercial services, social capital and sense of community, and a strong municipal economy. These components are similar to the essential elements of competitiveness. (Sotarauta et al., 2001). For that reason, it is justified to consider vitality as a competitive force of the municipality. Educational services are often considered a key factor in terms of the vitality of

municipalities. (Sallinen, 2019). However, no prior studies clarify how educational services and their cooperation networks create vitality. Few studies focused on campus collaboration (Freestone et al., 2021) and educational alliances (Stefanovic, 2008), and several studies on cooperation between educational companies (Nyman, 2015), (Orazbayeva et al., 2021), (Alunurm et al., 2020), (Bianchi et al., 2014). However, they do not examine value-creation processes from the point of view of producing public value; instead, they discuss them from the point of view of the individual/customer/student. No prior studies have proven scientifically that vitality can be created through value networks. The value is usually formed in the interaction of network actors and intangible (and tangible) value exchanges. Aarikka-Stenroos and Ritala (2017) saw the need to expand network-level research. They suggested increasing the scope of the study and looking at the network at the ecosystem level. According to them, the actors' or stakeholders' diverse perspectives are not utilized sufficiently. New perspectives would bring more complex ontology and research methods. (Aarikka-Stenroos & Ritala, 2017)

Kainuu is an immigration loss area in Finland, and Kajaani is the biggest city in the region. To strengthen the region's vitality, the City of Kajaani has gathered a strategic network and started the Kajaani Kampus 2025 project to support this mission. This study aims to discover how value exchange creates vitality in this value network. Allee's (2002) Value Network Analysis (VNA) provides a systematic analysis tool to demonstrate how one type of value is transformed into another. The method has two steps: 1) network mapping and 2) value network analysis. The purpose of the mapping is to visualize the exchange of value across the network. The mapping is based on roles, deliverables, and events. Once the mapping is done, it is possible to do a value network analysis, which can be done with exchange analysis, impact analysis, and value creation analysis. (Allee, 2008). However, no previous studies have approached the development of municipal vitality using Allee's (2002) value network analysis.

As a result of the first part of the method, VNA offers a two-dimensional value network map. However, because this value network is remarkably diverse, a two-dimensional map does not give a very illustrative picture of the diversity of network's diversity and dimensions. The map obtained because of the value network analysis is examined three-dimensionally. For this review, a public value ecosystem model is created for this study. It adapts the Network management model of Möller et al. (2004) and Trischler's and Westman Trischler's (2022) public service ecosystem models to create a public ecosystem model. The map created allows us to visualize the network three-dimensionally. The assumption is that a three-dimensional value map better and more comprehensively illustrates the roles, diversity of transactions, and network dimensions.

This study contributes to the literature in three ways. This case example provides one perspective on how value networks at the public-private interface can co-create value. A significant perspective for local and regional vitality development is also offered, as the study aims to determine how the network affects the city's vitality. This study provides implications for local and organizational development. It offers a case example of using value network analysis in the public sector. It also demonstrates how suitable (or not) Allee's (2002) value net analysis is for analyzing vitality.

Chapter two focuses on the literature review. It begins with various definitions of value and public value. It conducts a theoretical approach to value creation and introduces vitality as a value. In Chapter 2.2, the focus moves from values to networks. The terminology related to the network economy is genuinely diverse, and several different terms are used to describe the same phenomenon. The chapter provides insight into this phenomenon by giving definitions of various nets and networks. However, the chapter digs deeper into the definition of value networks and ecosystems as they are the most relevant aspects of this study. Also, a self-modified public value ecosystem framework is introduced in Chapter 2.3. Chapter three presents the methodology for this study. The research question is approached with Allee's (2002) Value Network Analysis (VNA). The

chapter presents a detailed structure for the framework and analysis of the value network. Chapter 3.3 presents how research data is collected, and Chapter 3.4 how it is analyzed. The presentation of the case is also part of chapter three. Chapter four summarizes the research findings. The results are primarily examined in the framework of value network analysis. As a result, the value creation system of the case network is illustrated with a three-dimensional value network map, as it helps to understand the diversity and dimensions of the network better and more comprehensively. Chapter Five concludes the study with a discussion of the theoretical and managerial implications, with suggestions for future research and limitations of this study.

2 Literature review

Cooperation is a necessity and survival factor for companies and organizations. It is a worldwide trend (Hakanen et al., 2007). Companies are searching for ways to achieve profits by creating better customer value. These means have traditionally been sought either through market-based business relationships or mergers. Strategic alliances and networking also seek new forms of business and markets. (Möller & Rajala, 2007). Previously, interrelated and distinct operators and systems are now lowering boundaries between them, and organizations are searching for opportunities and advantages to maximize cooperation. (Parolini, 1999) Organizations have changed their perspective from linear process to multi-directional co-production where value is created together, and the goal is to offer customers extra value (Norman & Ramírez, 1994).

First, two main streams must be clarified. Chapter 2.1 focuses on value and how it is created. Public value and vitality are worth defining, as their definitions vary considerably. Chapter 2.2 concerns networks and ecosystems. Chapter 2.3 focuses on representing the Public Value Network Model, which aims to demonstrate the theoretical framework of this study.

2.1 Value

The definition of value varies depending on whether it is discussed in a business or public environment. In the business environment, a commonly used definition is Porter's (1985) definition of value. He states that value is the amount buyers are willing to pay for what a company provides. The value is determined by total revenue, which indicates the price a firm's product achieves and the quantity it can sell. The goal of any generic strategy is to create value for customers that exceeds the costs. (Porter, 1985). However, Porter's (1985) value description is unsuitable for value in the public sector.

The public sector differs from the private sector in many ways. Moore and Khagram (2004) listed the four most significant differences between private and public organizations. One is the way they are earning their revenues. The value in the private sector is described as how much a customer is willing to pay and is measured with total revenue (Porter, 1985). The public sector's revenue source is the citizens and taxpayers; the private sector is the capital market and shareholders (Moore & Khagram, 2004). Another difference is that public managers usually have less discretion over their authorizing environment. Elected councilors are also more active and have varied interests than shareholders in private sector firms. The fourth difference that Moore and Khagram (2004) mention is that private sector managers can more easily measure the performance and value they are producing than public sector managers. (Moore & Khagram, 2004). As the private and public sectors are different, there are difficulties in defining value so that the term is suitable in both contexts. Petrescu (2019) found ten different definitions of value in the public sector. Those definitions had slightly different approaches to value based on whether it considered having individual or collective features.

Awareness of the term public value rose after Moore's (1995) seminar text. He stated that economic models and management techniques require a stricter focus in the public sector. Moore (1995) saw public value as equivalent to shareholder value in public management. However, there are other definitions for public value as well. Bryson, Crosby, and Blomberg (2014) define public value as something that is valued by the public or is suitable for the public, and they give procedural fairness as an example of public value. Today, the term is not confined to the public sector; it is applied across various organizations and public value studies that emphasize connecting individuals with society.

Meynhardt (2009) considers public value as a public good. According to him, public value is context-dependent. It starts and ends with the individual and clarifies that public value is a more general quest for values framing our understanding of society. It sharpens our understanding of political, social, and legal obligations and the co-production of values

in societies. However, he clarifies that public value is not just about the performance of the public sector or the legitimization of public institutions and claims that public value is value frame dependent. Benington (2011) wants to consider these two views together. Brown et al. (2021) state that siloing discussions of public value is unproductive. He claims that value should be looked at from a broader perspective. He argues that considering the issue broadly allows public values to be examined together as an activity of public managers and as an activity about the public.

According to Benington (2009), public value can be understood in two ways: what is valued by the public and what enhances the public sphere. He claims that the public sector cannot create public value alone. Benington (2009) justifies his argument by the fact that the processes of co-creation with the private sector, the third sector, and governments must also be considered. In education, this means mutual relations between different producers and users of the service, such as teachers, students, and parents. (Benington, 2009). However, Benington clarifies that public value cannot be achieved without the government. Osborne et al. (2022) successfully summarize the dimensions of value in the public sector in a table (Table 1). It clearly describes how the formation of value in the public sector can be viewed in various ways and from different perspectives. It also demonstrates how it is not easy to define public value, as it depends on perspective. Porter's (1985) definition of value corresponds to economic value and value-in-exchange. Value-in-production, value-in-use, and value-in-context contain an individual experience of adding value. As there is no standard definition for public value, Brown et al. (2021) state that extending our understanding of public value and its definition heterogeneity can create more possibilities for new policies and practices. If the public value concept is brought into broader debate and discussed with other ideas, it can be a more applicable term. This study does not rely on any specific definition of public value. This study focuses on vitality and considers it to be a public value. The concept of vitality is discussed in more detail in chapter 2.1.2.

Dimension of value	Description	Position in the public service delivery process
<i>Economic value</i>		
Value-in-exchange	Value as the price that a public service user will pay for a public service	At the policy stage (taxation) and/or point of production/co-production (fee/charge)
<i>Value-added</i>		
Value-in-production	Value-added, derived (1) from the experience of being involved in the co-design/co-production of a public service and independent of its outcomes; (2) from the value-added to a public service through service improvement	At the co-design and/or co-production stage
Value-in-use	Value-added, derived from the experience of using a public service, either in terms of its short/medium term effect upon well-being or of its impact upon the whole-life experience of a service user	At the use stage
Value-in-context	Value-added, derived from how a public service impacts upon the needs of a service user, in the context of their life experiences/expectations	At the use stage
Value-in-society	Value-added, derived from how a public service enables the expression and/or fulfillment of public/democratic values, the provision of public goods, and/or the indirect impacts of the service upon society	At the production and/or use stage

Figure 1. Dimensions of value for public services (Osborne et al., 2022).

2.1.1 Value creation

In economics, value creation is described as the transformation of the value of a particular good into a higher value, and value is usually expressed in financial terms. Meanwhile, creating public value involves influencing people's perceptions and emotions regarding society. (Meynhardt, 2009). Meynhardt claims that value creation is based on individual experiences rather than the common good. He also claims that public value creation occurs through processes that affect individual experiences concerning relationships with the public. Correia et al. (2021) provide a different perspective and demonstrate it with an example in their study. Their study states that public value is created

when governments create possibilities for citizens to develop themselves and their competencies. However, Meynhardt (2009) considers this approach to be in the public interest, public welfare, or general welfare, not a public value.

Value is also created through intangible assets. According to Allee (2008), intangible assets are negotiable forms of value. Intangible assets can be converted to tangible assets but negotiated as an exchange or trade for other intangible benefits or favors. Intangibles include all unpaid or non-contractual activities, such as non-contractual or unpaid benefits. (Allee, 2008). Allee explains that when a deliverable is offered by one and conveyed to and received by another, it is a transaction matter. As transactions are moving both ways, it is a matter of exchange. Allee clarifies that it is good to notice that both parties can develop their performance metrics for the transaction's quality, speed, and timeliness. However, A value conversion occurs whenever a value of one type is created or implemented from a value of another kind. (Allee, 2008).

In the business world, a commonly used tool to define a single firm's value chain is Porter's (1985) model of the value chain. The original idea of a value chain focuses on analyzing a firm's internal activities and their interaction (Herrala & Pakkala, 2009). The idea is that raw materials are transformed through various processes into finished products sold to the customer. It demonstrates all the value-adding activities along that process. (Rapcevičienė, 2014). A couple of scholars (Alberto, 2013), (Rapcevičienė, 2014), (Cardoso et al., 2022), (Waldt, 2016) have modified Porter's value chain model to be more suitable for public services. Models resemble each other, but there are differences. The main difference is that the public value chain focuses on customers, while the private sector value chain focuses on profit. The core components of the public value chain are people, service, and trust. The core components of the private value chain are loyalty, profitability, and growth. (Rapcevičienė, 2014). Alberto's (2013) Public Value Chain (PVC) relies on the idea that the role of public services is to offer services that are in line with the expectations and needs of the citizens and enterprises (Alberto, 2013). Rapcevičienė

(2014) shares this thought and adds that the main task of public organizations is to meet the needs of citizens and other public organizations by creating better value through public services.

The value chain model is suitable for just one organization and not a network, so the focus has moved from a single value chain to a networked approach (Bovet & Martha, 2000). This approach better supports networks because it offers a broader perspective. Porter's (1985) value system model is one attempt toward this broader perspective (Parolini, 1999). The model illustrates a large stream of activities.

Along with the company's value chain, it links the value chains in the value system. So, it includes value chains of suppliers, channels, and buyers. The firm's product becomes part of the customer value chain. Competitive advantage depends on how well the customer's value chain is understood and how the company fits into this total value system. (Parolini, 1999). However, Herrala and Pakkala (2009) consider this value system approach very practical for horizontal supply-chain types of networks. The value networks that are more complicated than horizontal types need to be analyzed from a distinct perspective. Parolini (1999) supports this view and says that in networks, strategic analysis needs to be broadened from the companies to the network level and the focus on value-creating systems the network holds. The value-creating system is the most essential characteristic of the network (Möller et al., 2004). A value-creating system is a set of activities that create customer value (Parolini, 1999). According to Möller et al. (2004), each product, service, or system requires certain value functions in the value-creating system. Value functions are all the actions needed to produce a particular product and service and make it usable by the end customer.

On the other hand, these functions need actors to implement them (Möller et al., 2004). These functions are carried out using sets of human resources and tangible and intangible resources (Parolini, 1999). The value creation system consists of those functions and

the companies controlling them, which are needed to develop, produce, and market the offer to end customers. (Möller et al., 2004).

2.1.2 Vitality as a public value

Before going into details about vitality, it is relevant to look at the term competitiveness, what it means, and how it relates to vitality. Developing competitiveness requires long-term and consistent work within the framework of the chosen strategy. The competitiveness of regions consists of eight elements that are dependent on each other. (Figure 2.) Six elements are essential. Image is influencing competitiveness with basic elements. It is shaped specifically to each region and depends on one or more elements. (Sotarauta et al., 2001). Sotarauta (2001) defines creative tension as the eighth element and clarifies that it is a power in the core of competitiveness that affects the renewal of the entire area and individual elements. (Sotarauta, 2001).

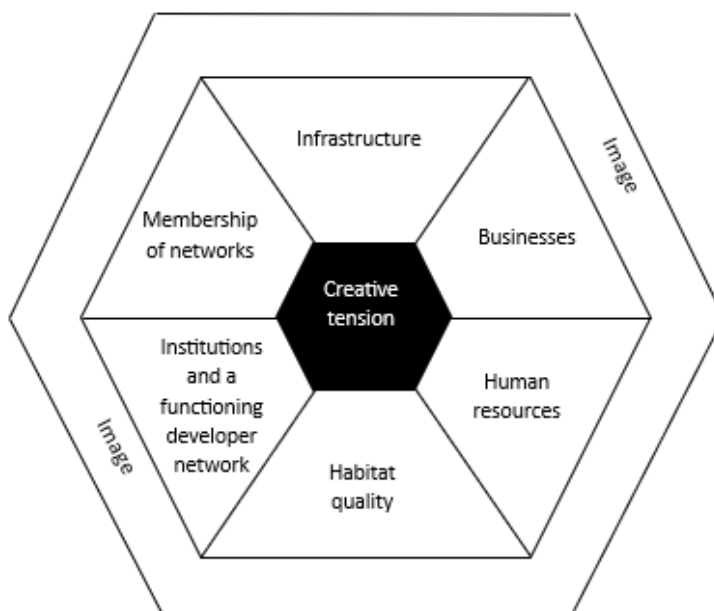


Figure 2: Eight elements of regional competitiveness (Sotarauta et al. 2001)

In the Finnish language, the words "kilpailukyky" (competitiveness) and "hyvinvointi" (wellbeing) usually describe social and public success. In English, there is no corresponding word to "elinvoima," but the phrases vitality and viability are used for the same thing (Ravenscroft, 2000). In this thesis, vitality describes the Finnish word "elinvoima."

Vitality in the municipal world is relatively new but also a multifaceted concept (Vuorento et al., 2019). Vitality as a concept came into use in 2009 when Baldauf (2010) suggested that a more descriptive concept was needed to simultaneously describe and examine the nation's potential from the perspective of economic growth, social functioning, and individual life. According to Baldauf (2010), vitality describes the ability to carry out change processes, flexibility, and risk-taking ability. Vitality arises from people and the interaction between people in communities and at the level of society (Baldauf, 2010). Since then, the concept of vitality has been widely used at the regional and municipal levels. However, the word has also received criticism because vitality can refer to almost any municipality task, and it has been used in different municipalities in different contexts. (Onkamo, 2017). Paananen et al. (2014) also consider vitality as a very abstract concept that varies in other contexts, but because of that, they see it as particularly useful.

Different authors can use vitality to describe other things from their starting points. According to Sallinen (2017), those perspectives are an attractive environment, a competitive business base, Competence and labor availability, social capital and a sense of community, public and commercial services, and a strong municipal economy. (Figure 2) To strengthen its vitality, the municipality must recognize environmental changes, adapt, and develop its operations to them. The city must introduce new processes and activate municipal residents, companies, working communities of various industries, and other stakeholders for cooperation if necessary. The key is to create positive effects and strengthen the ability to renew when the environment changes. (Sallinen, 2017)



Figure 3. Vitality components of the municipality. (Sallinen, 2017)

Some similarities can be noticed when comparing the eight-element model of regional competitiveness presented by Sotarauta et al. (2001) (2, p. 16) to these vitality components of municipalities. The following table summarizes the elements of these two models side by side. Based on this, it is justified to say that vitality is a competitive factor of municipalities and regions.

Table 1. Comparing components of vitality and competitiveness.

Vitality components of the municipality. (Sallinen, 2017)	Eight elements of regional competitiveness (Sotarauta et al., 2001)
Competitive business base	Businesses
Competence and labor availability	Human resources
Attractive environment	Habitat quality
Social capital and sense of community Public and commercial services Strong municipal economy	Institutions and a functioning developer network Membership of networks Infrastructure (Image)

However, there is no universal gauge for vitality. Municipalities have conducted their indicators and developed ways to measure them. Usually, the chosen indicators reflect the municipality's strategy (FCG, n.d.). The vitality indicator the Association of Finnish Municipalities uses tells the direction the city is going (kuntaliitto.fi, 2023). The indicator evaluates key issues regarding the municipality's vitality, such as population change, workplace change, tax revenue change, financial dependency ratio, and education level. (kuntaliitto.fi, 2023).

The vitality of the municipality is dependent on how attractive its residents, companies, employees, and tourists consider it to be (Sallinen, 2017). The most common way to develop vitality is to build a business life in the area (Sallinen, 2017). As more companies are in the area, more jobs are available, more residents are moving in, and tax incomes increase. With increased tax incomes, municipalities can provide services for residents. Sallinen (2017) claims that it is vital that municipalities have a sustainable basis and can create economic growth, employment, and tax revenue through their activities. It is also

essential for municipalities to find their strengths and consider those strengths in long-term strategic planning and decision-making. Vitality strengthening can also be achieved through competition and cooperation networks. (Sallinen, 2017)

The act of regional development and Finland's accession to the European Union raised the importance of strategic planning in regional development. (kuntaliitto.fi, 2022). Since then, strategic planning has become one of the most central tools for regional development. Competition between regions for residents, business investments, and public investments has intensified. Population and economic growth have focused more on large urban areas than before. At the same time, the area outside the metropolitan areas has lost its population. The migration mainstream has long consisted of young adults moving to big cities. The population of migration loss areas is decreasing and getting older. (Donner-Amnell, 2020). The regional development system aims to balance the regions' development and ensure their well-being based on sustainable development and economic growth. The Ministry of Employment and the Economy is responsible for regional development. The government decides on national development priorities and prepares a regional development decision every four years. The regional councils are regional development authorities and are responsible for the strategic overall development of the region. The statutory planning task of the provinces includes a regional plan, a regional program, and a regional plan for land use. The regional councils draw the regional programs from the region's starting points. The municipalities and the state are responsible for the development of the regions. (kuntaliitto.fi, 2017).

The Regional Council is a statutory union of municipalities in its region, and every city must be a member. There are 19 counties in Finland. (kuntaliitto.fi, 2017) They have two main statutory tasks: regional development and land use planning. (kuntaliitto.fi, 2017). The county's statutory planning task includes a regional plan, a regional program, and a regional land use plan.

According to Luoto and Virkkala (2017), Finland's national strength is its regional higher education system, which supports innovation and places business. Recognition of the regional influence of higher education institutions creates conditions for place-based regional development. Smart specialization is place-based development aiming to renew and expand regional economies (Luoto & Virkkala, 2017) by strengthening research, development, and innovation activities. (Regional Council of Kainuu, 2021). Regional operators have the region's best expertise and strengths for this task. (Luoto & Virkkala, 2017). Central to this development is cooperation between the public sector and companies, and emerging innovations and research results can be turned into products of high processing value and profitable, growing, and export-oriented business operations. (Regional Council of Kainuu, 2021). Regional development specialists often understand the need to construct regional advantages and build coalitions well. Regional development coalitions are initiating and promoting learning-based innovation, change, and improvement processes. (Huzzard et al., 2010). In the ideal case of the four-helix model, the new democratic provincial administration, companies and entrepreneurial actors, civil society, and the region's higher education institutions interact closely. The area recognizes its local specificity through its connections to other regions and places. At its best, a tight network that promotes stimulating and creative work is created. (Luoto & Virkkala, 2017)

As we can see, strategic work related to regional development and strengthening vitality is done on many levels. To get an overall picture, the strategic responsible parties of the previous paragraphs and the documents they prepared are summarized in the image below (Figure 4).



Figure 4. Strategy work for regional development and strengthening vitality is done at several levels and by versatile authorities.

2.2 Nets and networks

For organizations and companies, networks offer an opportunity to achieve, for example, different customer service solutions, i.e., to increase the external efficiency of the service network. However, the benefits brought by the network do not come for free. Building the network also requires the development and application of new management systems. The key is to consider how the traditional value creation system can be renewed. The investments needed are realized only after the investment. That is why it often also requires network members to be convinced of the achievable benefits compared to other alternatives. (Möller et al., 2004)

The terminology related to the network economy is genuinely diverse, and several different terms are used to describe the same phenomenon. In literature, the terms net and network are commonly used. Also, the terms value net (Parolini, 1999), strategic net and network (Jarillo, 1993), network companies (Ollus et al., 1998), collaborative networks (Camarinha-Matos & Afsarmanesh, 2006), and strategic company networks (Hyötyläinen, 2000) are commonly used.

Möller et al. (2004) separate the terms net and networks. Net (business net / strategic net) is an organization formed by a specific group of companies (including organizations), built deliberately and goal-oriented. The net has a goal(s) that guide its development and operations. Each member also has their own goals. The net members have agreed roles associated with responsibilities for the approved activities, usually for risk-taking and earning logic. (Möller et al., 2004), (Möller & Rajala, 2007). According to Möller et al. (2004), a network is a web-like structure formed by relationships between companies and other organizations. This structure is limitless. The idea of the network is to create something that cannot be done alone so that all parties involved benefit from this cooperation (Hakanen et al., 2007). However, networks are never concluded for transaction-cost reasons like alliances (Child & Faulkner, 1998). However, separating the terms net and network is unnecessary in this thesis, and both terms are used equally.

According to Möller & Svahn (2006), a net is a business net if there are at least three members involved, it is built consciously and purposefully, the net has defined clear goals that guide its operation, and the members of the net have specific agreed-upon roles and responsibilities. The business net is often also strategic and, therefore, can be called a strategic or value net. (Möller & Svahn, 2006). Strategic nets are usually created to aim at something a company cannot reach alone. Its success requires network capabilities: a good view of the nature of the various kinds of nets and the possibilities and requirements they possess, a suitable network strategy, and long-term cooperation (Möller & Rajala, 2007). In regional-level development, the commonly used term for the network

is a network of regional developers. The regional developer network can also be interpreted as a loosely organized strategic network that aims to influence the region's long-term development. (Linnamaa & Sotarauta, 2001).

2.2.1 Value network

Changes in the technological and economic environment are making it difficult for organizations to maintain excellent performance. This has led to organizations' dependence on one another to satisfy their customers' needs more efficiently. (Parolini, 1999). The phenomenon is not new. Porter approached this phenomenon with his Value system model in the 1980s. However, organizations often participate in multiple value-creating systems (VCS) and are part of value nets (Parolini, 1999). Value nets focused on supply chains at the beginning of the 21st century. (Parolini, 1999) (Bovet & Martha, 2000). Social network analysis has been used to understand network knowledge flows and patterns. However, social network analysis cannot link the network patterns to value. (Allee, 2008).

Allee defined a value net as a group of people or organizations that purposefully create social and economic good through complex dynamic exchanges of tangible and intangible value (2009, p. 429). According to Allee and Schwabe (2015, p. 19), "a value network is any set of roles and interactions that generates a specific kind of business, economics, or social good or outcome through dynamic exchanges of tangible and intangible value. It is a human-centric, role-based, network view of any business activity." Allee (2008) explains that intangible assets include know-how, skills, and competency. It can also mean the effectiveness of work groups, the efficiency of service processes, or the level of trust between people. Tangible assets are usually financial resources. She clarifies that active agents of the network are real people with specific roles. Internal value networks consist of activity-centered connections between individuals and work teams. External-facing value networks encompass relationships between the organization and its

suppliers, investors, strategic business partners, and customers. (Allee, 2008). Then, some networks have the same purpose of creating particular outcomes. Those networks usually work across industrial and organizational boundaries. (Allee, 2008)

To assess if any value conversion opportunities are missing, it's essential to analyze the activity inputs and outputs associated with each role in the network. According to Allee (2008), value network participants create roles that transform intangible and tangible assets into more transferable forms of value that can be handed over to other roles through the execution of a transaction. In turn, the value of the deliverables received is realized as profit or improvement of tangible or intangible assets. (Allee, 2008)

The public sector is also increasingly moving towards a network society, where network relationships and their definition and management are at the center. Interrelated and overlapping political, economic, and social networks play an increasingly significant role in society's functioning. (Möller et al., 2004). As represented previously in Chapter 2.1.2, network membership has been mentioned as one essential element of competitiveness.

2.2.2 Ecosystems

Ecosystem has also become a popular term when describing different forms of cooperation between companies (Adner & Kapoor, 2010). The concept of the ecosystem was used in a business context for the first time in 1993 by Moore. Business ecosystems are business systems that include technologies, institutions, and actors, such as consumers, citizens, businesses, and non-profit organizations, who cooperate in loose networks. (Aarikka-Stenroos & Ritala, 2017). Silicon Valley is a hub of high-tech companies in northern California, USA. This hub is a geographical hotspot where more and more companies are located. Van Der Burgh et al. (2012) call these hotspots business ecosystems. The term ecosystem is used in many ways. Möller and Halinen (2017) see that in some places, the term is used as a synonym for a business network, sometimes as an interconnected

environment, and in others as a theoretical and empirical approach. However, Möller and Halinen (2017) claim that the perspective of strategic networks is still valid in these extended network environments.

In ecosystem thinking, the perspective is value-oriented. It consists of numerous stakeholders, each with a specific role. In the corporate sector, these stakeholders are suppliers, competitors, and customers, who form a business ecosystem together through their transactions (Adner & Kapoor, 2010). Möller and Halinen (2017) note that each stakeholder in the business ecosystem can have several roles and be part of various value networks. Both Aarikka-Stenroos and Ritala (2017) and Möller and Halinen (2017) agree on theoretical disparities related to value networks, which can be seen as a confusion and overlapping of concepts among different theories and research streams. Although Aarikka-Stenroos and Ritala (2017) use the word themselves, they admit that the term ecosystem is a buzzword that brings little to the analysis.





2.3 Value Network Analysis (VNA)

The study approaches the research question with value network analysis (VNA) developed by Allee (2002). "Value network analysis provides a way to model, analyze, evaluate and improve a company's ability to transform both tangible and intangible assets into other types of transferable value and realize greater value for itself" (Allee, 2008, p. 1). Value Network Analysis (VNA) systematically analyzes how one type of value is converted into another. It links your network interactions directly to financial and non-financial scorecards. It helps to understand the roles that bring value and to show the relationships that the organization depends on. It explains how the value of each role can be realized more effectively and how tangible and intangible assets are utilized to create value. (Allee, 2008).

Whether the delivery is considered tangible, or intangible depends on its contractual nature. Material exchanges are contractual transactions involving goods, services, or income in value network analysis. Material exchange is also considered information products or services that directly generate revenue or are expected or paid for as part of the product or service based on the contract. The exchange of intangible knowledge and information is not governed by contracts but enhances the core value chain of products and services. Intangibles are actions people take to ensure operations run smoothly and foster relationships. (Allee, 2008)

The method has two phases: 1) mapping the network and 2) analyzing the value network. The purpose of mapping is to visualize value exchanges across the network. Mapping has three elements: roles, deliverables, and transactions. Once the mapping is done, it is possible to do the value network analysis, which can be conducted with exchange analysis, impact analysis, and value creation analysis. (Allee, 2008).

Figure 5 illustrates the network roles and transactions. Nodes are colored dots, and they represent roles. The color defines which level the role is on. Directional arrows between roles illustrate how deliverables move between roles. (Allee & Schwabe, 2015) Tangible deliverables, such as goods, services, and revenue, are demonstrated on the map with solid directional arrows. This study draws intangible transactions, such as knowledge extras, favors, and benefits, as a blue directional arrow. In the case of an exchange, the two-headed, red, and dotted arrow is used. However, Allee and Schwabe (2015) do not consider two-headed arrows practical as they do not tell the nature of the relationship, define the actual activities, or indicate who is generating them. Another problem that they mention is that exchange may not happen at the same time. (Allee & Schwabe, 2015).

Roles	 = Roles at the Ecosystem level	 = Roles at the Macro level
	 = Roles at the Meso level	 = Roles at the Micro level

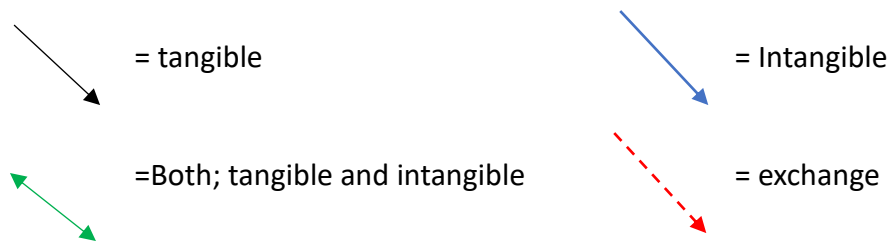


Figure 5. A simple example of roles, deliverables, and transactions.

2.4 Theoretical framework

Möller et al. stated in 2004 that understanding the network and its concepts becomes more apparent when the relationships between its actors are examined three-dimensionally. (Möller et al., 2004). Möller et al. (2004) presented a two-layer network management model to demonstrate that. The lower level of the (micro-level) network is usually formed by suppliers and their customers, while at the highest level of abstraction, networks and networks form industries and their connections, i.e., clusters. (Möller et al., 2004). However, this division lacks layers when considering public or just value creation. Aarikka-Stenroos and Halinen (2017) approach ecosystems from the point of view of network management and add a new layer to Möller and Halinen's (1999) framework of network management levels. Trischler and Trischler (2022) created a framework for value creation in public service ecosystems. The developed framework includes three levels: the macro-level, the meso-level, and the micro-level. The macro level is the institutional level, and it identifies arrangements that legitimize societal value creation. The meso-level examines how value is created within organizations, while the micro-level focuses on how individuals contribute to value creation. (Trischler & Westman Trischler, 2022). Osborne et al. (2022) even add the sub-micro-level as a fourth level. This addition seeks to highlight how personal and professional beliefs and values influence value creation within public service ecosystems.

The framework developed by Trischler & Westman-Trischler (2022) is based on the value system thinking of the public service. Petrescu (2019) sees it as a framework that can be used to better understand the complexity of the value creation of public services at the level of society, services, and individuals. Osborne (2022) added a fourth level to this, which included beliefs. However, value production was seen as a service that produces value for the customer and ignores the production of public value. From the point of view of public value creation, adding a third or fourth layer to the network or ecosystem analysis seems justified. In the public sector, public value brings one more dimension to the examination. However, the value experienced by a person is not necessarily equal to the public value. The decisive thing is whether we look at value production from the individual perspective, as a common good, or both.

The public value ecosystem model was created for this study. It adapts the Network management model of Möller et al. (2004) and Trischler's and Westman Trischler's (2022) public service ecosystem models to create a public ecosystem model. In this public value ecosystem model, the individuals operate at the micro level. These individuals can be city residents, students, private entrepreneurs, and other individual-level stakeholders. This model's meso-level is local and includes local organizations, companies, associations, and administration. The macro level, from the point of view of public value, includes actors at the regional level, such as regional administrative agencies, regional unions, and wellbeing services of regions. In this study, the layer of the ecosystem is added on top. The ecosystem level represents the rest of the wider environment to which the network members are connected in one way or another. These include, for example, the nation and its government, other regions and their administrative organizations, the European Union, and other physical environments.

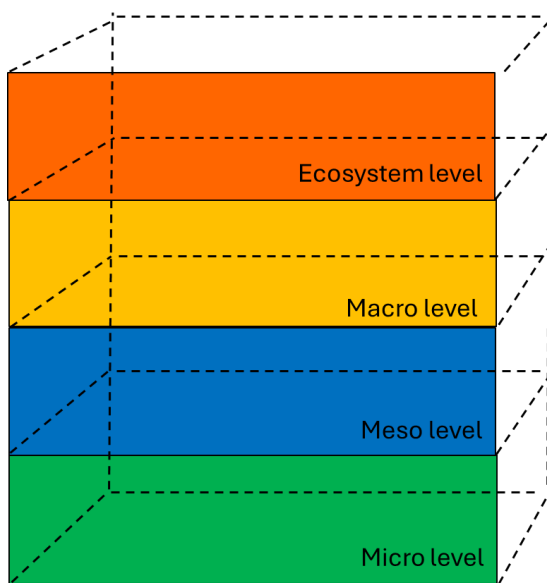


Figure 6. Public value ecosystem

This four-level model supports and complements strategy work for regional development, which was represented earlier in chapter 2.1.2 (Figure 4, p. 22). These two images have been merged in Figure 8 to demonstrate this compatibility.

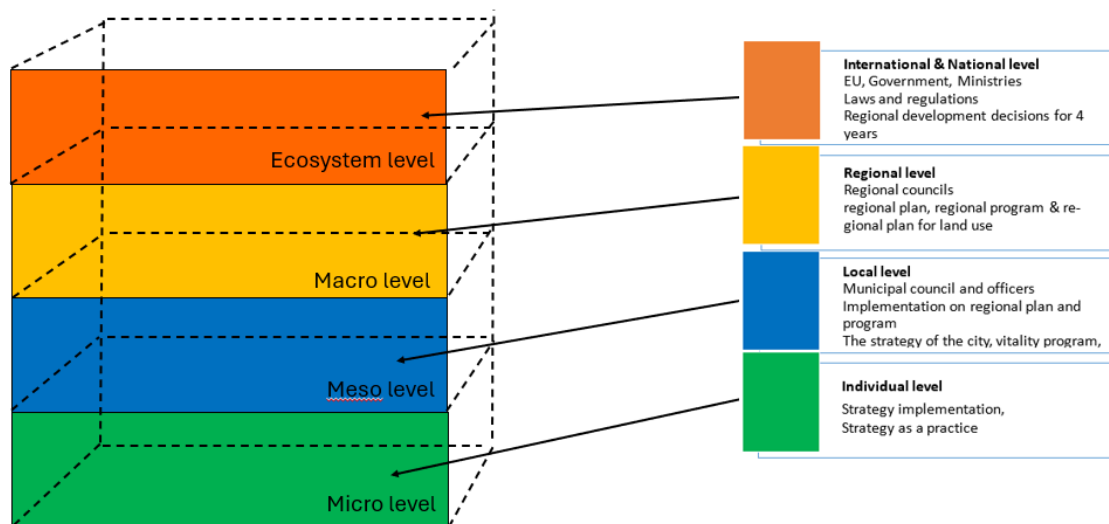


Figure 7. Strategies for development and strengthening vitality in public value eco-system model.

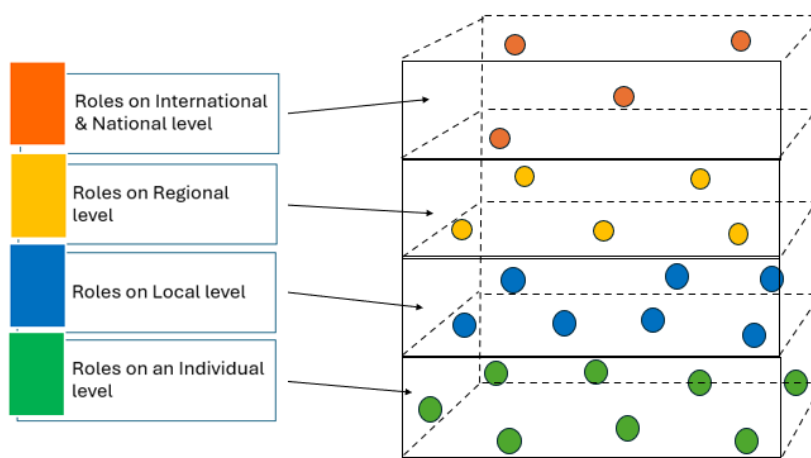


Figure 8. Three-dimensional example of the value network map



Figure 9. Construction of the theoretical framework.

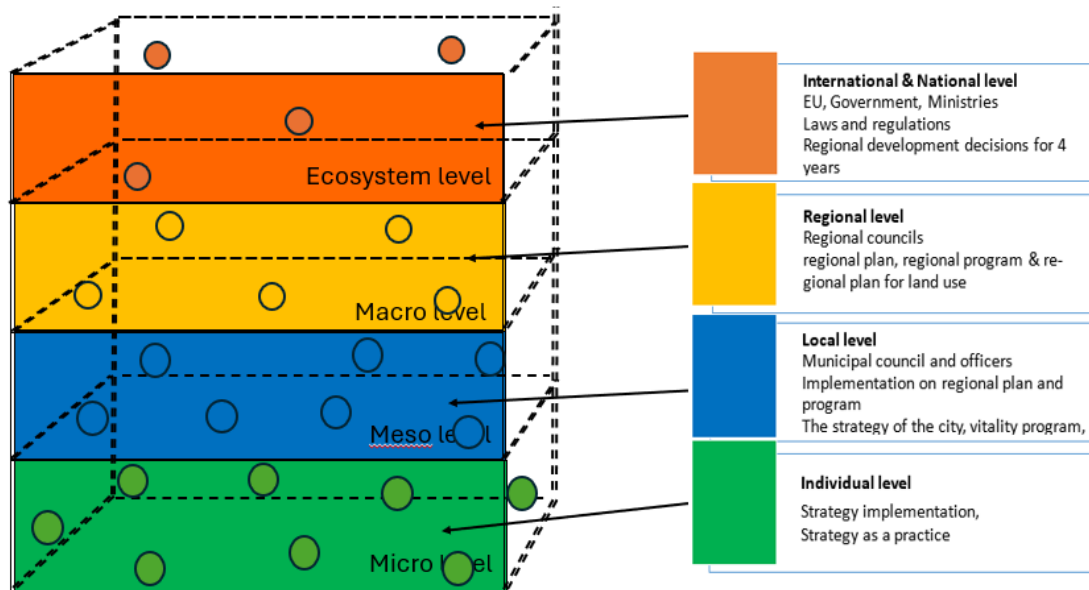


Figure 10. The theoretical framework.

3 Methodology

This study investigates how a strategic network creates vitality. Chapter 3.1 represents how this challenge is approached. Kajaanin Kampus 2025 offers a great case to approach this mission. This project is introduced in Chapter 3.2. Allee's (2002) value network analysis (VNA) provides a suitable approach to this case and question. Chapter 3.3. introduces how the data is collected in this case study. Chapter 3.4. explains in detail how the value network analysis is conducted. The quality of the data is evaluated in chapter 3.5.

3.1 Research approach

This study represents a qualitative-driven case study. The case studies focus on understanding phenomena within single or multiple settings. One case study can include various levels of analysis. Case studies generally utilize a mix of data collection techniques, including archival research, interviews, surveys, and observations. (Eisenhardt, 1989). However, case studies might suffer a lack of methodological rigor concerning the validity and reliability of the research. (Gibbert et al., 2008). Therefore, internal and external validity, construct validity, and reliability must be assured while conducting the study. These aspects are evaluated in detail in chapter 3.5.

Mixed methods research approaches the research question, which is recognized as the third primary research approach. It combines methods from quantitative and qualitative research approaches (Johnson et al., 2007). The goal of this combination is to strengthen the validity of the study. (Schoonenboom & Johnson, 2017). This approach meets the need to assure the validity and reliability of research results.

According to Johnson et al. (2007), mixed methods research can have three drives: qualitative, quantitative, and equal. This study is qualitatively driven as it relies on a

qualitative view of the research process, but it recognizes that quantitative data and approaches will benefit the research process.

According to Schoonenboom and Johnson (2017), one significant difference in mixed methods is related to the timing of the components of the technique. Qualitative and quantitative components can be either simultaneous or consecutive. Another aspect related to timing is the dependency between components. Research components are dependent if the implementation of the second component depends on the results obtained with the first component. In this study, the value creation of the network is analyzed with the help of Value Network analysis. This VNA has two steps: mapping and analysis (Allee, 2002) (Allee, 2008) (Allee & Schwabe, 2015). The stage where qualitative and quantitative components are brought together is called an integration point. According to Schoonenboom and Johnson (2007), defining the integration point is an important, if not the most important, decision in designing a mixed methods study.

In this study, the mapping phase begins with a survey and is followed by an interview. The interview is dependent on the results of the study. Based on the survey and interview, a network map is created and used as the basis for the analysis phase. This phase is the first integration point of the analysis. Based on the results of the mapping part, it is decided how the analysis phase will be conducted. These steps indicate that this research consists of successive components dependent on the preceding. This phase represents the second integration point of the analysis.

3.2 Case: Kajaanin Kampus 2025- Project

The research question is approached through the framework presented in Chapter 2.4. The target for this case study is the Kajaanin Kampus 2025 project (KK25-project) starting in 2023. The project aims to develop Kajaani's educational center into an attractive Silicon Valley, attracting students, experts, and companies. The project will create new

space solutions and services, establish organizational campus culture, and create a beautiful and comfortable environment for studying, working, and partnerships. (Appendix 1). The case provides an excellent basis for research. However, to see why, let us look at the vitality issue from regional and local perspectives.

Regional level. Kainuu is a 22,700 square-kilometer province that covers 7 percent of Finland's area. Kainuu includes eight municipalities and has a population of 71,257 (kainuu.fi, 2022). Kainuu's unemployment rate in 2023 was 8.1 %, the fourth lowest in the country. However, the lack of labor has become a bigger problem than unemployment (ELY-center of Kainuu, 2023). Kainuu is an example of a migration loss area. Five hundred people enter the job market annually, and a thousand leave. The population is decreasing and aging as young people move away due to, among other things, limited education. 70 % of the University of Applied Sciences students come from outside the region, and 50–60 % of them stay in the area. (Donner-Amnell, 2020).

The strategies create a solid base for effective decision-making in the region. With the help of strategy, essential issues for the province's future have been brought to a central position in Kainuu: raising competence and utilizing natural resources. (Sotarauta & Lakso, 2001). Increasing the level of expertise has previously been developed in Kainuu by increasing training and using the expertise of the University of Oulu. The region has also sought to acquire expertise in the field to enable developing high-tech companies to operate in Kainuu. Kajaani University of Applied Sciences has invested heavily in software technology. Vocational training has also been strengthened with electronics industry training programs. (Sotarauta & Lakso, 2001). After 20 years, the situation is still the same. According to Donner-Amnell's (2020) research, increasing and diversifying education and skills were seen in Kainuu as the most important ways to promote the region's favorable economic development. (Donner-Amnell, 2020).

The statutory planning task of the regions includes a regional plan, a regional program, and a regional plan for land use. In Kainuu, the regional plan and program are combined in the same document, the Kainuu program, which directs resources and cooperation toward achieving common goals. It is drawn up every municipal election period. The regional plan extends to 2040, and the Kainuu regional council approved the regional program for 2022-2025 on December 22, 2021. (Regional Council of Kainuu, 2021). Kainuu's regional plan describes the current situation, a vision for 2040, values, critical success factors, and goals to achieve by 2040. The Kainuu program has four themes: 1) well-being and employment; 2) livelihoods, skills, and digital transition; 3) green and fair transition; and 4) accessibility, regional structure, and multi-location. The Kainuu program defines goals and required actions for these themes for 2022-2025. The goals are divided into general goals that seek structural effects and development goals that implement those general goals. (Regional Council of Kainuu, 2021).

Educational services, including basic education, high school, and vocational studies, are often considered a key factor for municipalities' vitality. Higher education institutions are wanted in municipalities as they increase the expertise and vitality of the region and attract the future workforce. (Sallinen, 2017). In the Kainuu program, the importance of education and the development of know-how and skills is recognized as part of the theme of livelihoods, skills, and digital transitions. The program sees education and skills as essential building blocks of the area's vitality, residents' well-being, sustainable growth and competitiveness of companies, well-being at work, and attractive working life. The general goals of the Kainuu program are 1) to develop and diversify the educational offer in the region so that they can meet the needs of working life in Kainuu and secure and develop educational services in the entire Kainuu region, 2) the attractiveness of education in the region will be strengthened and 3) Kainuu will receive new permanent and flexible undergraduate education, which will increase the education level of Kainuu residents and increase the share of university graduates in the population. (Regional Council of Kainuu, 2021).

The program lists critical success factors and strategic actions to achieve these goals. The essential factors of success for education are 1) the intensification of cooperation between educational institutions and working life, 2) the education path in Kainuu from basic education to university education will be diversified, and permanent university undergraduate education will be provided in the region, and 3) the number of international students in Kainuu will increase, and their integration into working life will be enhanced. Each factor includes several strategic actions. For example, for the third critical success factor, the strategic actions demonstrate how to increase international students and ensure they stay in the Kainuu area.

The Kainuu program set its goal for education as follows:

Kainuu's educational offerings, methods of implementation, and cooperation are developing and diversifying in a way that the degree and continuous education provided in the area and solutions enabling continuous lifelong learning proactively respond to the needs of working life in Kainuu, as well as secure and develop educational services in the entire Kainuu area. In Kainuu, high-quality secondary and higher education and liberal arts education service providers have a strong national and international position and role. The attraction of education is getting stronger. New permanent and flexible university undergraduate education will be available in Kainuu. The education level of Kainuu residents and the proportion of those with higher education are increasing. (Regional Council of Kainuu, 2021)

The development goals of the Kainuu program in terms of education are summarized in three themes: 1) Cooperation between Kainuu's educational institutions and working life will be enhanced, 2) Kainuu's educational path from basic education to university education will be diversified, Kainuu will receive permanent university undergraduate education and digitalization will create new educational services, 3) The number of international students in Kainuu increases and integration into working life becomes more effective. (Regional Council of Kainuu, 2021).

Kajaani is a city of more than 36,000 inhabitants in Kainuu (kajaani.fi, 2023). The strategy of Kajaani has three themes: A thriving city, a city of children and youths, and a resource-wise city (The City of Kajaani, 2023). According to their strategy, Kajaani wants to be an attractive city for growing businesses. To achieve that, the city of Kajaani is making a reforming vitality policy. The vitality policy of the city of Kajaani implements the city's strategy. (The City of Kajaani, 2022). The policy meets the goals of the strategy theme of a thriving city, and the implementation of the policy is created in practical cooperation aiming to develop the vitality of Kajaani.

The importance of higher education for the growth of vitality and new businesses in Kajaani is undeniable. According to the vitality policy, higher education in the region will be increased, and opportunities for lifelong learning will be improved. Kajaani's student-friendliness will be developed, and the city will become familiar to students. (City of Kajaani, 2022).

In a customer survey conducted in 2023, the residents of Kajaani were asked how they felt about moving away. Based on the results, 15% of respondents were classified as out-migrants. Forty-five percent of respondents considered moving out, while 40% defined themselves as staying (11%) and staying in Kajaani (29%). Overall, one can see a slight increase in thoughts of moving in the past 5 years. When asked how likely the people of Kajaani would recommend Kajaani as a place to live, the index number has decreased by five units from last year. In 2023, there were more criticisms than recommendations. However, the most critical are the people of Kajaani under thirty. Overall, the young respondents from Kajaani have weak confidence in their future. In 2023, the young people's answers received a value of 5.98/10. The difference between the older age groups is straightforward because the corresponding values of the older age groups were more than 7.49/10. This age group also felt more strongly than other age groups that Kajaani does not offer enough things to do in their free time. (Myllymäki, 2023).

To compete against that and other concerning issues, Kajaani started the Kajaanin Kampus 2025 project (KK25-project). It is a concrete strategic action to strengthen vitality in the area. It fulfills the goals of Kajaani's strategy and vitality policy (Appendix 1). According to the vitality policy, higher education in the region will be increased, and opportunities for conversion and additional and continuing education for working people will be improved. The student-friendly Kajaani attraction will be enhanced, and the city will be familiar to students. (The City of Kajaani, 2022). Several organizations are included in the project, forming a network together. A value network is any group of people in various roles who interact with each other and exchange tangible and intangible assets to achieve economic and social good. (Allee, 2008). Knowledge, skills, and competence are examples of intangible assets. It can also be the efficiency of work groups, the efficiency of service processes, or trust between people. Tangible assets are usually financial resources. (Allee, 2008) Based on this, the KK25 project and its stakeholders form a value network. Therefore, the KK25 project offers an excellent case-study network for this study. It is strategically established to increase the vitality of the region. Vitality as a value is not a product or service but is assumingly created throughout transactions in the network.

3.3 Data collection

In this case study, the data is collected using two different methods. The data collection is done as follows.

Step 1: An online survey questionnaire is emailed to the stakeholders' representatives. The survey aims to collect information on how stakeholders see their organization's role in the value network of the KK 25 project and its roles in the network.

Step 2. Each person is interviewed in a Semi-structured one-on-one online interview. This interview aims to go even deeper into the network's transactions and what deliverables distinct roles offer or receive from others.

Based on the answers obtained from the first two methods, a simple prototype of the visualization diagram of the KK25 network is created. This prototype will be used in the following research phase. The assumption is that the data demonstrates what kind of value-creating system the network has and how different tangible and intangible deliverables are converted into vitality. The results of the value network analysis are examined three-dimensionally through the value network map and the four-level Public Value Ecosystem Model. The chosen data collection methods are described in more detail in the following chapters.

3.3.1 Survey

The first step is a survey. Representatives will be emailed a questionnaire (Appendix 2), which they are asked to answer. The online questionnaire was conducted using MS Forms. The representatives are members of the KK25 project group. As the representatives are Finnish, the survey is conducted in Finnish. The assumption is that when the representative can answer in her native language, she understands the question correctly. The risk of this lack of understanding is eliminated or significantly reduced.

The survey aims to determine how the project group members see their roles in the network and what roles the other network members represent. This is the first part of the mapping phase (3.3.1 Mapping). The goal is to identify the core elements: the network's key roles and the most important events and performances. The scope of this section is at the organizational level, and all the questions are about their organization and the value network of the project.

The survey was sent to eight board members. The board members are directors of their sector or organization. The survey was also sent to the project manager and two project coordinators. They all represented the public sector. One of the board members did not

reply to the survey or participate in the interview. In total, data was collected from ten people. Seven of them are male, and three are female. Half (5) are 46-55 years old, two are 56-65, and one is 26-35. They are all highly educated. Two people have a doctoral degree, three have a master's degree, and five have a lower or higher degree from the University of Applied Sciences.

3.3.2 Interview

After answering the survey, respondents were asked to book a time for an individual interview. The interview aims to collect information about the transactions that the organizations deliver or receive. This is a part of VNA's mapping phase, but the data is also used in analysis. The interview follows a semi-structured form. Interviews are highly effective for gathering rich, empirical data (Eisenhardt & Graebner, 2007, p. 28). The semi-structured interview offers the opportunity to collect more detailed information that cannot be obtained with a survey. The interview is held online and recorded. It took about an hour. Questions were written on a slide show, and respondents could read the questions while being interviewed. However, other more detailed questions were asked beyond these. The Slideshow and its Interview questions can be seen in Appendix 3.

3.4 Data analysis

Value Network Analysis systematically analyzes how one type of value is converted into another. It helps to understand the roles that bring value and shows the relationships that the organization depends on. It explains how the value of each role can be realized more effectively and how tangible and intangible assets are utilized to create value (Allee, 2008). This analysis makes it possible to determine what kind of value the network produces.

3.4.1 Mapping

The basic form of a Value Network diagram has three elements: roles, transactions, and deliverables. According to Allee and Schwabe (2015), the first step of the mapping phase is to define the scope, boundaries, context, and purpose. Allee and Schwabe (2015) suggest thinking carefully about the level of detail of the mapping. For a good scope of mapping, it is relevant to have a clear purpose, defined boundaries, and a determined level of detail. The level of detail depends on what the focus question is. Just like in Google Maps, the mapping can be done in "street view," "city view," "state view," or "country view." As the map is scaled up, the detail is omitted as well. (Allee & Schwabe, 2015).

The second step is to determine the map's roles and participants. Allee and Schwabe (2015) describe roles as the hats we wear in different groups. They clarify that a role is not a synonym for a job title. The role does not care who plays it. People or groups fill the roles, and the participants play some role. (Allee & Schwabe, 2015, p. 38).

The third step is to identify transactions and deliverables, including both tangible and intangible. (Allee & Schwabe, 2015). These transactions and deliverables are demonstrated with arrows. Different arrows are drawn in assorted colors to visualize transactions more effectively. Tangible deliverables are drawn on the map with solid black arrows, and intangible transactions are with solid blue arrows. If the deliverable is both, a two-headed green arrow is used, and in case of an exchange, the arrow is drawn in red.

The last step of the mapping phase is to complete the map by sequencing the transactions. (Allee & Schwabe, 2015). The purpose of sequencing is to identify interdependent value flows in the network. It also helps to notice possible missing links in value flows and relationships. (Allee & Schwabe, 2015)

3.4.2 Analysis

Allee and Schwabe (2015) state that a basic assumption of the Value Network Analysis is that value merges through the role interactions of the network. Therefore, it is relevant to understand the value dynamics of it. After the mapping phase, the network is ready to be evaluated and analyzed. According to Allee and Schwabe (2015), there are four issues to address. 1) exchanges, 2) value flow, 3) Impact, and 4) value creation. The Exchange analysis is best conducted in a group and through conversation. It examines role interaction patterns to uncover crucial value connections, flows, and any potential gaps. Additionally, it can highlight overall trends in value creation or loss. (Allee & Schwabe, 2015). Value flow optimization helps to support adequate value flows. The first thing in value flow optimization is to identify the key issues. The value networks may involve several variables and no specific formula for optimizing them. According to Allee and Schwabe (2015), combining several minor improvements typically creates a sharp improvement overall. Impact analysis is commonly performed at the role level. Every role has a set of inputs, tangible and intangible. The impact analysis helps assess how these inputs bring value and benefit to the network, what the key links are, and if there are some missing links. Allee and Schwabe (2015) pointed out that when a role receives a value input, it should use that input to improve its capability, provide value to other roles, or both. The Value creation analysis looks at these value outputs of a role, firstly to the direct and indirect recipients. A Perceived Value Analysis assesses a specific deliverable's value level. Perceived value is usually done at the role or participant level and is always subjective.

In this study, phases 1-3 are completed completely. The data collected from individual interviews offer information on how roles exchange the deliverables with each other. Combining this information with the map is challenging as the number of exchanges is large. Drawing each one of them would make the map difficult to interpret. Therefore, all the deliverables are first tabulated in Excel. The transactions show the formation of the value streams in the network. Based on this analysis, the impact of the value stream

can also be concluded. To demonstrate this, the components of vitality are numbered from one to six. Also, impacts are numbered based on their group (for example, 3.1 or 4.6). All the transactions are numbered as well. As a result, the tabulated data shows how the network produces value. Numbers are the codes that are used to make the mapping phase simpler. A template for organizing this data and for its analysis is below in Table 2.

Table 2. Template for organizing data and for analyzing value creation.

Mapping				Value network analysis			
Exchanges				Value flow		Impact	Value creation
Comes from	Deliverable (input)	Type	Goes to	Activities input generates	Possible outcome	What is achieved?	Components of vitality

Phase 4 of the analysis is only partly completed. To complete the Perceived Value Analysis, a subjective assessment of value creation should be done on the role level. However, this study aims to discover how value exchange creates vitality in this value network. Even though the study lacks role-level assessment, the analysis still demonstrates how vitality is made in the network.

3.5 The assessment of the quality

According to Gibbert et al. (2008), internal validity is accomplished when the researcher provides a plausible causal argument and powerful logical reasoning to support conclusions. For example, A clear research framework supports this. To enhance construct validity in case studies, Gibbert et al. (2008) suggest that researchers build a transparent

chain of evidence from initial research questions to conclusions and look at the phenomenon from different perspectives using different data collection methods. Even though case studies do not typically allow for statistical generalization, it does not mean that case studies do not have the possibility for generalization. Eisenhardt (1989) suggests that case studies can serve as a foundation for developing theories. Generalization can be achieved through cross-case analysis of several cases or by conducting different case studies in the same organization. (Eisenhardt, 1989) (Gibbert et al., 2008). Reliability means the absence of random errors. (Gibbert et al., 2008). According to Gibbert et al. (2008), this can be avoided through transparency and replication by paying attention to careful documentation and clarifying research procedures. Replication can be accomplished by compiling a case study database, which brings together all the notes and documents from the study. (Gibbert et al., 2008)

For Internal validity, this study provides logical reasoning for the network's value creation causal relationship. The conclusions are justified, and the research framework also supports causal arguments. In the framework, the VNA and Public Value ecosystem model support each other and justifiably bring depth to examine the research results and their conclusions. The research question has a clear answer and can be proven with data. However, this is a case study, and due to the generalization of the results, it lacks evidence.

Data was collected from survey and interview responses to ensure the study's reliability. Still, random errors may exist. The fact that one of the management team members did not participate in the survey and interview weakens its reliability. Now, others represent this role's transactions between the roles. The events and methods of research have been clarified and opened. This supports the claim that this study is reliable despite its weaknesses.

4 Findings

The interviewees' views on vitality contained many common elements. In general, vitality was seen as a certain kind of positive buzz. "Vitality is when people move around and organize different events," described one interviewee. Several interviewees also referred to this buzz. One of the interviewees described vitality as the opposite of withering. One interviewee described vitality as "renewal" and "staying updated". Two interviewees referred to the area's staying power in their responses. How can residents and businesses remain in the area in the future? A rather human-oriented perspective was brought up by one of the interviewees, who described vitality as follows: Vitality is like a promising future. How to sustainably and responsibly build a good future for everyone. There are different opportunities to fulfill oneself and live a life of one's own. And, of course, to work and study.

In several of the responses, entrepreneurship played a significant role in defining the concept of vitality. They saw it important that businesses have opportunities to operate and conditions that develop their competitiveness and productivity. Two interviewees also mentioned educational institutions' research work and other opportunities that cooperation with educational institutions can offer. The city's competitiveness was also mentioned in three responses. One of the respondents described this as follows: *"The city's vitality is that it has residents, taxpayers, and customers for companies. Companies have jobs, and with that, people have a livelihood and a good life. When a city is competitive, people are happy to come here to study, work, and do business."*

One of the respondents gave a different description of vitality than the others. He described vitality as follows:

"It is like the turnover of companies. It is the turnover that is generated in this area. If we were to talk about it at the state level or the national level, it is the same as the gross domestic product... That means more

companies, more turnover, growth of companies, more turnover and through that more staff, more tasks with partners, service contracts and so on”.

All interviewees unanimously agreed that the Kajaani Campus 2025 project can have a positive impact on strengthening the vitality of the area. In the following chapters, the results of the value network analysis are presented through the six components of Vitality shown in Figure 3 (p.21). Section 4.1. focuses on the mapping phase, where the roles and deliverables of the network are defined. Deliverables have been extracted from the interviews and are listed in a table, with a sender and recipient defined for each. In addition, the table specifies whether the deliverable is tangible or intangible or whether it contains both elements. Chapter 4.2 represents the findings of the value network analysis. The value flow of each deliverable is described in the table. The results are sequenced under different themes. These themes are part of some components of vitality. Chapter 4.3 brings together the different stages of the value creation process and shows how this process can be mapped onto a value network.

4.1 Mapping phase: roles and deliverables of the network

The mapping phase includes definitions of roles. In total, 38 roles were mentioned during interviews. This consists of eight board members. The three project team members who were interviewed are considered in these calculations as one “the Project team” (Z). Roles are defined at the organizational level. However, if some individuals were mentioned specifically, they are included on the map.

In the survey, respondents evaluated the centrality of roles in the network. They were asked to go through different stages based on how central the role was. The scale for evaluation was from one to five. The higher the score, the more central the role is. The questionnaire was used as a framework for the interview, and the interviewees were

allowed to complete and refine their answers. Based on the responses, an average was calculated for each role. The project team (the project manager and two project coordinators) is leading. The project team's average score was 4.9. The Kajaani University of Applied Sciences (KAMK) and the vitality services of Kajaani also have significant roles, with an average score of 4.7. Kajaanin koulutusliikelaitos (KAO) had average score of 4.4. Kajaani Technology Center scored 4.1, Technology Sector 3.8, Kajaanin Pietari 3.7, Kajaanin Mamselli, and Education Sector 3.5. Based on their scores, roles were added to the map. In the survey, respondents had a chance to name other roles that were not mentioned. Only one of the respondents added companies and a third sector as a part of the Kajaanin Kampus 2025 network. However, during interviews, many other less significant roles were briefly mentioned. The roles that respondents mentioned during the interview were not included in the survey and were randomly added to the outer circles of the map because their centrality was not asked. In the interview, respondents were asked which level they considered roles to be. The respondents were quite unanimous about the levels of roles. This allows us to examine roles within the research framework. The map and its roles demonstrate that parties (roles) are involved in value creation at all levels. A two-dimensional examination of the network map also shows the roles' centrality. The closer a role is to the center, the more central the organization plays in this network.

The map is divided into four sections: educational institutions, municipal support services, other support services, and the customer sector. This sector includes Kajaani University of Applied Sciences and Kainuu Vocational School (KAO). KAO is part of Kajaanin koulutusliikelaitos which also offers Highschool studies for citizens. However, the high school is not located in the Campus Area. Kajaani University Consortium is part of the University of Oulu, and it offers university studies for bachelor's degrees in education and special education. The city of Kajaani provides municipal support services. This sector includes technical and environmental services, early childhood and basic education, Food and cleaning, and housing services; everything the City of Kajaani offers for its

residents. Other support services include organizations such as Finland's Student Health Service (FSHS), Kajaani Technology Center, the wellbeing services of the county of Kainuu, Ely-Center, Finnvera, and the Regional Council of Kainuu. The fourth sector is the customer sector. According to respondents, the two main customer groups of the network are students and companies. The citizens of Kajaani, the Campus, and student associations were also mentioned.

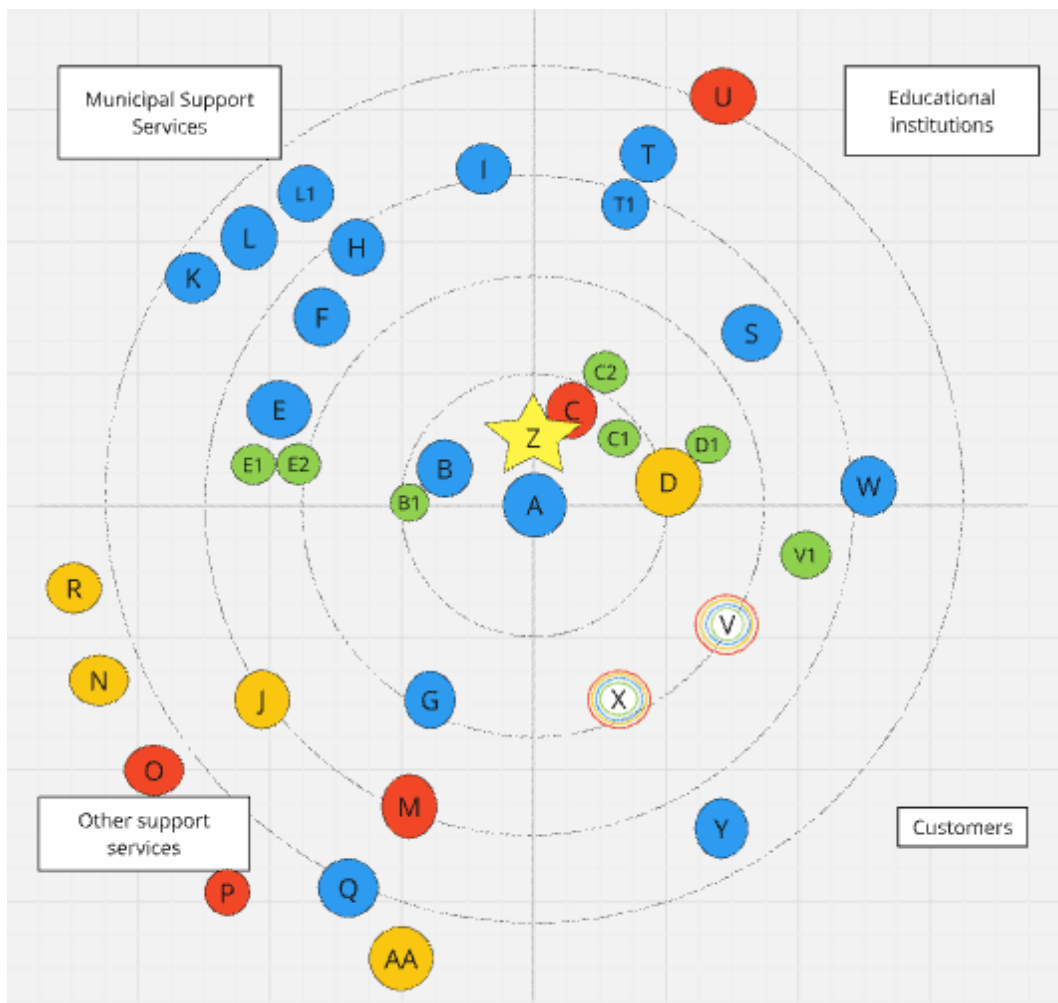


Figure 11. Roles on the value network map

The role codes on the map (Figure 13) are:

- A- The project team

- B- Vitality services of Kajaani
- C- Kajaani University of Applied Sciences (KAMK)
- D- Kajaani Koulutusliikelaitos, Vocational School
- E- Technical sector of Kajaani
- F- Kajaanin Pietari
- G- Kajaani Technology Center
- H- Kajaanin Mamselli
- I- Education sector of Kajaani
- J- Wellbeing services of the county of Kainuu
- K- City Council of Kajaani
- L- City of Kajaani
- M- Finland's Student Health Services (FSHS)
- N- ELY-center
- O- Finnvera
- P- Kuntaliitto
- Q- Third sector organizations
- R- Regional council of Kainuu
- S- Kajaanin koulutusliikelaitos, Highschool
- T- University Kajaani Consortium
- U- University of Oulu
- V- Students
- W- Workers in the campus area
- X- Companies
- Y- Citizens
- Z- Campus Area
- AA- Regional State administrative agency
- B1 - Marketing and communication manager
- C1- Principal
- C2- Equipment Custodian

- D1- Head of sustainable development
- E1- Facility manager
- E2- Property manager
- L1- Corporate division on Kajaani
- T1- Teacher Education
- V1- The Group of student representatives

A three-dimensional examination of the network map shows that network roles can be found at all levels. Red dots represent national roles, yellow dots represent regional roles, blue dots represent roles on the local level, and green dots represent roles on the individual level. A three-dimensional view adds depth to the analysis, as the impacts and networks of roles can be assessed better. The networks and impact areas of a national or international role are more significant than those of an individual-level role.

The second phase of the mapping is to define transactions. Based on the individual interviews, a total of 144 deliverables were tabulated. This data was collected on the table based on from whom the deliverable comes, whether it is a tangible or intangible transaction, and to whom the delivery is. The mapping phase is not yet completed. After value network analysis, the mapping phase will be completed. This part is explained in chapter 4.3.

4.2 Value network analysis

The analysis of the value flow was conducted after the mapping phase. First, the deliverables were analyzed based on what activities the input might generate and what the possible outcome of it is. Based on this analysis, transactions were grouped by their impact. In total, twenty-two different impacts were found. These impacts were sequenced under six elements of vitality, which were introduced in chapter 2.1.2 and illustrated in picture 3 (p. 20).

In the next six chapters, these findings are introduced in more detail.

4.2.1 An attractive environment

The data from the interviews was tabled. Table 3 summarizes deliverables that are impacting the 1) Attractive environment component of the vitality. Based on the value flow, three different impacts were sequenced. Those themes were: 1.1) The campus area is developed to become an innovative work and study environment, 1.2) Innovative workspace, possibility to utilize the triple helix model, and 1.3) Kajaani attracts students companies, and the workforce. In total, this component is targeted at twenty-six deliverables. Thirteen of the deliverables targeted theme 1.3, theme 1.2 was the goal for 8 deliverables, and theme 1.1 for 5 deliverables. It is worth noting that the analysis has been limited in this regard. The attractive environment component does not include public services, as they are part of another component. Therefore, housing and spare-time activities have also been limited to the public and commercial services component, even though those are affecting how people might consider a part of attractive environment as well. The findings of that component will be examined later.

The vitality services of Kajaani and the project team have the most significant roles in this part of the vitality creation. Vitality services is responsible for the financing of the Kajaanin Kampus 2025 project. So, it is making all this development work for the environment. It is also responsible for the marketing of the city of Kajaani. Marketing aims to attract new residents and businesses to the area. The project team, on the other hand, is responsible for the practical implementation of the project and therefore also plays an essential role in this area of vitality. The project is aimed at developing the Campus area, and therefore, the role of the project team is justifiably central. The attractive environment also includes the outdoor areas of the Campus. The aim is to expand the working, operating, and learning environments to the outdoor areas. In this regard, the technical

sector has prepared an environmental plan for the campus area. One interviewee's response highlighted the role of educational institutions in building a positive atmosphere on campus. It was surprising that the role of educational institutions in promoting the attractiveness of the area was not more significant according to the interviews. However, the role might be more significant, especially in attracting students, but this was not highlighted in the interviews. It is relevant to remember, though, that another educational institution did not attend the interview. Therefore, the role might be less significant.

Table 3. Value creation for an attractive environment

Mapping				Value network analysis		
Exchanges		Value flow			Impact	Value creation
Comes from (roles)	Deliverable	Type of deliverable	Goes to (roles)	What activities might the input generate?	What is the possible outcome?	What is the goal? What is the network trying to achieve?
Campus area	1.1.1 Attractive and innovative environment for studying	tangible	Students and Companies	Motivated students, Good and healthy working conditions, new ideas and connections.	The students feel more comfortable in their studies and attachment increases, satisfied customers and long-term lease agreements, innovations, networking	1.1 Campus area is developed to become an innovative work and study environment
	1.1.2 Work input	intangible	Vitality services	Campus area gets developed, and the project runs efficiently	The campus area is developed	
	1.1.3 Observating on development targets	intangible	Network	Development targets are noticed and fixed more efficiently	Efficiency, Campus area is developed	
Project team	1.1.4 Facilitation	tangible	Network	The project team is running the project	Project runs smoothly	
	1.1.5 Network convener and link between organizations in the network	intangible	Network	Connections are forced	efficiency, the Project runs smoothly, and the Campus area is developed	
	1.1.6 Customer guidance for real estate	intangible	Campus Area	New companies are interested in locating to the area	Facilities are in purposeful use	
Vitality Services	1.1.7 Budgeting and project management	tangible	Project team	Campus Project will be done; Campus area is developed	Attractiveness of the Campus area and Kajaani increases	
	1.1.8 Financing, procurements	tangible	Project team	Campus Project will be done; Campus area is developed	Kajaani attracts people to move in and companies to locate, efficiency and lower costs	

Campus area	1.1 Attractive and innovative environment for studying	tangible	Students and Companies	Motivated students, Good and healthy working conditions, new ideas and connections.	students feel more comfortable in their studies and attachment increases, satisfies customers and long-term lease agreements, innovations, networking	1.2 Innovative workspaces, possibility to utilize Triple helix model
Companies	1.2.1 Attractive and innovative environment for studying	intangible	KAMK, KAO, Highschool, Univ. Of Oulu, Kajaani Univ. Consortium	commissioned research, work-related school assignments, pathways to work for students,	Long-term companionship, beneficiary both ways,	
Project team	1.2.3 Environmental development of the campus area	tangible	KAMK & KAO	An attractive environment attracts new students and companies to the area.	More students are coming to study in Kajaani.	1.3 Kajaani attracts students, companies, and workforce
	1.2.4 Environmental development of the campus area	tangible	KAMK & KAO	An attractive environment attracts new students and companies to the area.	More students are coming to study in Kajaani.	
Vitality services	1.2.5 Marketing and Communication	tangible	Campus Area	The campus attracts students and companies	More people and companies come to the area.	
Project team	1.3.1 Marketing and Communication	tangible	City of Kajaani	Kajaani attracts students elsewhere	The brand of Kajaani as a city for youths increases	
	1.3.2 Environmental development of the campus area	tangible	Kajaaniin Pietari	An attractive environment affects living as well	People want to live in Kajaani	
	1.3.3 Innovative learning and working spaces	tangible	KAO, KAMK	An attractive environment attracts new students and workers to the area	More students are coming to study in Kajaani	
	1.3.4 Innovative learning and working spaces	tangible	Students, companies, workers	The area offers a comfortable and cozy environment,	More people are coming to study in Kajaani and staying there	
	1.3.5 A new kind of business center concept	tangible	Kajaani Technology Center	Attract new businesses in the area	Kajaani becomes more attractive for companies	

4.2.2 Competence and labor availability

The analysis of the value flow was conducted after the mapping phase. First, the deliverables were analyzed based on what activities the input might generate and what the possible outcome of it is. Based on this analysis, transactions were grouped by their impact. In total, twenty-two different impacts were found. These impacts were sequenced under six elements of vitality, which were introduced in chapter 2.1.2 and illustrated in picture 3 (p. 20).

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Table 4. Value creation for competence and labor availability

Mapping				Value network analysis			
Exchanges				Value flow		Impact	Value creation
Comes from (roles)	Deliverable	Type of deliverable	Goes to (roles)	What activities might the input generate?	What is the possible outcome?	What is the goal? What is the network trying to achieve?	Which component of Vitality is affected?
Highschool	2.1.1 Dual career	tangible	Students, Third sector	Athletes can do both: study and train efficiently	Athletes stay in the area	2.1 Educated people will stay in the area	2. Competence and labor availability,
KAMK	2.1.2 Future Workforce	tangible	Companies	Hiring new staff gets easier	Companies stay in the area		
	2.1.3 Dual career	tangible	Students, Third sector	Athletes can do both: study and train efficiently	Athletes stay in the area		
KAO	2.1.4 Dual career	tangible	Students, Third sector	Athletes can do both: study and train efficiently	Athletes stay in the area		
	2.1.5 Dual career	tangible	Students, Third sector	Athletes can do both: study and train efficiently	Athletes stay in the area		
KAO, Highschool	2.1.6 Pathway studies	tangible	KAMK, Kajaani University Consortium	After secondary education, students continue their studies in higher education.	Young people stay in Kajaani.	2.2 Pathways from school to	
Students	2.1.7 Moves in Kajaani	tangible	City of Kajaani	more citizens,	Students possibly staying in Kajaani after graduation		
Vitality Services	2.1.8 Employment and international services	tangible	Campus Area	New national and international students, adult education			
Campus area	2.2.1 Connections with companies	intangible	Students	The idea for a thesis, internship, summer jobs,	Connections, work experience,		

Companies	2.2.2 Internships	tangible	KAMK, KAO	pathways to work-life for students,	Beneficiary both ways
Education sector	2.2.3 Practice nursery	tangible	Kajaani University Consortium	Students do not have to look at nurseries outside of Kajaani	Students stay at Kajaani,
Kajaani University Consortium	2.2.4 Practice nursery	tangible	Education sector	City can offer permanent jobs in their nurseries	Challenge to hire staff decreases
Vitality Services	2.2.5 Employment and international services	tangible	Network	More international talents are recruited to the area, new jobs will occur	The recruitment process might get easier, the unemployment level rises, and people do not have to move elsewhere to work.
Citizens	2.3.1 New competent citizens to Kajaani	tangible	City of Kajaani	More work, more income via taxes, more cost via services	population increases, from moving loss to moving profit
Kajaani University Consortium	2.3.2 Practice nursery	tangible	Education sector	City can offer permanent jobs in their nurseries	Challenge to hire staff decreases
KAMK	2.3.3 Future Workforce	tangible	Companies	Hiring new staff gets easier	Companies stay in the area
KAO, Highschool	2.3.4 Pathway studies	tangible	KAMK, Kajaani University Consortium	After secondary education, students continue their studies in higher education	Young people stay in Kajaani
Vitality Services	2.3.5 Employment and international services	tangible	Network	More international talents are recruited to the area, new jobs will occur	The recruitment process might get easier, the unemployment level rises, and people do not have to move elsewhere to work.
					2.3 There is enough competent workforce

	2.3.6 Employment and international services	tangible	Campus Area	New national and international students, Adulte duration		
Campus area	2.4.1 Connections with Companies	intangible	Students	The idea for a thesis, internship, summer jobs,	Connections, work experience,	2.4 Work experience can be gained during studies
Companies	2.4.2 Work- study periods	intangible	KAMK, KAO	Students do not have to look for companies outside Kajaani	Students stay at Kajaani	
Education sector	2.4.3 practice nursery	tangible	Kajaani University Consortium	Students do not have to look at nurseries outside of Kajaani	Students stay at Kajaani,	
Kajaanin Pietari	2.4.4 Co-operation with educational institutions	both	KAO, KAMK, Highschool	Real-life tasks for students	Satisfied customers, work experience skilled workforce	
KAMK	2.4.5 co-operation, student work,	both	Project team	From idea to practice	More efficient work	
Mamselli	2.4.6 Co-operation, work practices	both	KAO	Real-life experience for students, summertime workers, and substitutes makes it easier to hire	Satisfied customers, Work experience, skilled workforce,	
Project team	2.4.7 New corporation models with work life, Job requests at the campus, student work	tangible	KAO, KAMK	real-life work experience for the customers,	reduced costs, real-life work experience for their students	
Students	2.4.8 Work input	tangible	Companies		Future workforce	

4.2.4 Competitive business base

Twenty transactions impact the third vitality component, the Competitive business base. These transactions are divided into three themes: 3.1) Diverse opportunities for businesses to start and expand: business plots and premises, 3.2) Enough customers, and 3.3) Infrastructure exists. The first one is impacted by nine deliverables, the second one with five deliverables, and the third one with six deliverables. The total value network analysis of this component is summarized in Table 5.

The technical sector plays the most significant role in generating the value of this component. The technical sector is divided into three different parts: land use, municipal engineering and sports facilities, and the facilities center, which manages all the city's public buildings. This top position is justified, as the technical sector ensures that a company has everything it needs to start and maintain a business, such as land, electricity, water, heating, and roads to the destination. However, there are some legal obstacles to municipal support services, which somewhat limit the municipality's services in the campus area. The director of technical services described the matter this way: *"...in practice, operating in the market is only allowed to be done very slightly... if more companies come to the area, then we will have to leave and someone else will have to start running the business. That is legally possible."*

The city of Kajaani offers companies plots and premises to start their business. The technology center also offers premises to companies. The plan includes transferring one property in the campus area to the technology center, which would change the role of the technology center in the Campus area significantly. Vitality Services directs potential customers to the technology center if the technology center would be able to better meet the customer's needs in terms of premises. Vitality Services also provides other business services in the city of Kajaani. With the companies, new residents may arrive in the area and bring more customers for the companies and member organizations of this network.

Table 5. Value creation for a competitive business base

Mapping			Value network analysis				
Exchanges			Value flow		Impact	Value creation	
Comes from (roles)	Deliverable	Type of deliverable	Goes to (roles)	What activities might the input generate?	What is the possible outcome?	What is the goal? What is the network trying to achieve?	Which component of Vitality is affected?
City of Kajaani	3.1.1 Business plots, business premises	Tangible	Companies	Companies build their premises; Companies start a business in Kajaani	promotes employment	3.1 Diverse opportunities for businesses to start and expand: business plots and premises	3. Competitive business base
	KAMK	3.1.2 New building to manage	tangible	Kajaani Technology Center	more work		
Project team	3.1.3 A new kind of business center concept	tangible	Kajaani Technology Center	Attract new businesses in the area	Kajaani becomes more attractive for companies		
	3.1.4 Electricity	tangible	Campus area	working conditions are okay	Study and working environments run smoothly, food can be made for students.		
3.1.5 Heating		tangible	Campus area	working conditions are okay	Study and working environments run smoothly		
Technical sector	3.1.6 water	tangible	Campus area	working conditions are okay	Study and working environments run smoothly, food can be made for students.		
	3.1.7 security	tangible	Campus area	Working conditions are safe	People feel safe,		
	3.1.8 Lease agreements	tangible	Companies	lease payments, working conditions are agreed upon and secured	Monthly costs, commitment to facilities		

Technology Center	3.1-9 Consulting	intangible	Project team	Understanding increases	Purposeful use of the Campus area	
Citizens	3.2.1 New Citizens to Kajaani	tangible	City of Kajaani	More work, more income via taxes, more cost via services	population increases, from moving loss to moving profit	3.2 Enough customers
KAMK	3.2.2 Customers	tangible	Mamselli	Food and cleaning services are from the one provider	Stable income, efficiency	
Students	3.2.3 Income	tangible	Mamselli	More customers, more income	More jobs needed	
Workforce	3.2.4 new customers, income	tangible	KAO, KAMK			3.3 Infrastructure exists
	3.2.5 Lease Agreement	tangible	Kajaanin Pietari	More customers, more income	stable income,	
	3.3.1 Telecommunications	tangible	Network, not KAMK		Connections able long-distance working and studying	
	3.3.2 Electricity	tangible	Campus area	working conditions are okay	Study and working environments run smoothly, food can be made for students.	
	3.3.3 water	tangible	Campus area	working conditions are okay	Study and working environments run smoothly, food can be made for students.	
	3.3.4 security	tangible	Campus area	Working conditions are safe	People feel safe,	
Technical sector	3.3.5 Property maintenance	tangible	Kajaanin Pietari	Easy living for customers	Satisfied customers	Study and working environments run smoothly
	3.3.6 Heating	tangible	Campus area	working conditions are okay	Study and working environments run smoothly	

4.2.5 Public and commercial services

Twenty-three deliverables impact the public and commercial services component. These are sequenced in four themes: 4.1) Diverse study options, 4.2) Educational services from kindergarten to higher education, 4.3) Housing options are diverse and affordable, and 4.4) Public services are accessible and sufficient. The first two themes are both a goal for two deliverables, the third for five, and the fourth for fourteen deliverables. The whole value network analysis of this vitality component is collected in Table 6.

Most interviewees defined Kajaani as a city for studying, and there are many different study options in Kajaani. The educational path from kindergarten to Higher education already exists in many respects because there is also the opportunity to complete university studies in Kajaani. However, the versatility of educational paths in the future will certainly be crucial here. One interviewee answered this way: "The ideal situation would be if young people did not have to move out of Kajaani to study."

In terms of housing, Kajaani Pietari plays a significant role in the network.

"We organize housing packages for students. But we are also responsible for rental apartments for other groups that are essential to Kajaani's attraction and retention power. That group includes normal working people, people who already live in Kajaani, and people who are moving to Kajaani."

Kajaani Pietari is also able to meet the needs of students after graduation.

"We have a large housing stock and very different sizes and types of apartments. We can offer housing services for different stages of life... We can solve problems. Whether that means housing support or advice or things like that."

Housing costs in Kajaani are affordable. *"Currently, a two-room apartment on the free market in comparison areas is in the range of 12.40€/m², but in our case, we are moving around the 11-11.70€/m² level, so we are somewhat below that pricing."*

Regarding other public services, one interviewee mentioned Finland's Student Health Services (FSHF), which provides healthcare services for university students. The Kainuu Welfare Region provides services for secondary school students. FSHS services are not located in the Campus area, but this possibility has also been discussed between the University of Applied Sciences and FSHS.

In terms of commercial services, Kajaani's situation is positive. Kajaani is the center of Kainuu, and many services in Kainuu are concentrated in Kajaani. However, from the perspective of young people and students, there does not seem to be much to do for this target group. One of the interviewees described the matter this way:

"I don't know the exact numbers, but I have a feeling that most of them won't stay here precisely because many have said that Kajaani is a nice city, but then there is a lack of things here, for example (specifically for students, for young people, something like that) what can you do here?"

Another issue mentioned was jobs and the lack of them.

Table 6. Value creation for public and commercial services

Mapping				Value network analysis			Value creation
Exchanges		Value flow			Impact	Value creation	
Comes from (roles)	Deliverable	Type of deliverable	Goes to (roles)	What activities might the input generate?	What is the possible outcome?	What is the goal? What is the network trying to achieve?	Which component of Vitality is affected?
Project team			KAO, KAMK, Highschool, Kajaani University Consortium	the educational pathway from nursery to Higher Education	Citizens stay in Kajaani	4.1 Diverse study options	4. Public and commercial services
Education sector	4.1.1 New students	intangible	KAO and High schools	Students do not have to look at other schools outside Kajaani	Students stay at Kajaani,		
Citizens	4.2.1 children in Kajaani continue studies in Kajaani	intangible	KAO, KAMK, Highschool, Kajaani University Consortium	the educational pathway from nursery to Higher Education	Citizens stay in Kajaani	4.2 Educational services from kindergarten to higher education	
Education sector	4.2.2 Customer guidance for further studies	intangible	KAO and High schools	Students do not have to look at other schools outside Kajaani	Students stay at Kajaani,		
Citizens	4.3.1 New customers	tangible	Kajaanin Pietari	With more customers, the occupancy rate of apartments increases.	More income	4.3 Housing options are diverse and affordable	
Kajaanin Pietari	4.3.2 Student housing	tangible	Students	students find affordable and comfortable staying at Kajaani easily	Satisfied customers, no need to move elsewhere		

	4.3.3 Housing services	both	Citizens, workforce	You can find a place to stay after graduation as well from the same service provider.	Satisfied customers, no need to move elsewhere	
	4.3.4 Renovation construction, information exchange	both	Technical sector	From housing operations to housing business,	Houses are well-maintained and customers stay satisfied	
Students	4.3.5 New customers, income	tangible	Kajaanin Pietari	More customers, more income,	the occupancy rate of apartments increases	
KAO, KAMK, Highschool, Kajaani University Consortium	4.4.1 educations services	intangible		the educational pathway from nursery to Higher Education	Citizens stay in Kajaani	
Companies	4.4.2 Services	both	KAMK	more orders might occur	long-term customer, Stable income	
FSHS	4.4.3 Health services at campus	both	KAMK, Students	Accessibility to health services becomes easier	Everyday life becomes easier for students	
Kajaanin Pietari	4.4.4 Renovation construction, information exchange	both	Technical sector	From housing operations to housing business,	Houses are well-maintained and customers stay satisfied	
	4.4.5 Satellite office at the campus	tangible	Students	services are easily accessible	Satisfied customers, no need to move elsewhere	
KAO, Highschool	4.4.6 Food services	tangible	Students	One warm meal every day	Students' wellbeing is supported	
						4.4 Public services are accessible and sufficient

Mamselli	4.4.7 Food and cleaning services	tangible	Education Sector	One free warm meal is offered to everyone, study environments stay tidy, and students are satisfied	Wellbeing is supported	
Project team	4.4.8 Side office at the Campus	tangible	Kajaanin Pietari	Services become more accessible	More customers	
	4.4.9 Repositioning the current services	tangible	KAO	Services become more accessible to the customers	More customers, more income, more satisfied customers	
Students	4.4.10 New customers, income	tangible	Kajaanin Pietari	More customers, more income,	the occupancy rate of apartments increases	
Technical sector	4.4.11 Premises	tangible	Mamselli	Working conditions are healthy, suitable, and appropriate	Study and working environments run smoothly, food can be made for students	
	4.4.12 Street maintenance	tangible	Campus area	Customers and staff can arrive at work/school	Easy accessibility for customers	
	4.4.13 Premises	tangible	Mamselli	Working conditions are healthy, suitable, and appropriate	Study and working environments run smoothly, food can be made for students	
Wellbeing Services County of Kainuu	4.4.14 Health services on the campus	both	KAO, high school, students, citizens	Easy accessibility to the services	Wellbeing is supported	

4.2.6 Social capital and sense of community

Only fifteen deliverables target the social capital and community component. These deliverables can be sequenced under four themes: 5.1) Networking, 5.2) the Possibility of creating a sustainable future, 5.3) Social life and feeling of belongingness, and 5.4) Spare-time activities. Seven deliverables targeted the theme 5.2. The second place goes to theme 5.3 with four deliverables. Themes 5.1 and 5.4 both have two deliverables. A detailed analysis of value flow and creation is summarized in Table 7.

All interviewees recognized the importance of community and the importance of contacts. With the pandemic, distance learning became more common, and students stayed home. Now, efforts are being made to restore the situation to strengthen community spirit. This is being sought both in educational institutions and among students and companies. However, distance learning is not seen as bad, and its opportunities are still wanted to be maintained. To promote community, the campus area aims to create spaces that allow people to hang out. Such areas are seen as promoting not only spontaneous encounters between students but also between companies and students.

In terms of sustainable development, many innovative ideas were brought forward, including shared bikes and cars in the Campus area, all the way to agricultural plots. In terms of leisure activities, educational institutions organize events and opportunities for students to meet each other. However, organizing leisure activities or their importance in keeping young people in the area did not emerge as a very significant topic in the interviews, and only fifteen deliverables were targeting this component.

Table 7 summarizes the deliverables and value creation of this component.

Table 7. Value creation for social capital and a sense of community

Mapping				Value network analysis			Value creation
Exchanges		Value flow		Impact	Value creation		
Comes from (roles)	Deliverable	Type of deliverable	Goes to (roles)	What activities might the input generate?	What is the possible outcome?	What is the goal? What is the network trying to achieve?	Which component of Vitality is affected?
Campus area	5.1.1 Place to hang out	intangible	Customers	Spontaneous encounters, a possibility for networking,	Lower boundaries to interact and communicate with strangers, and new friends, Community spirit rises,	5.1 Networking	5. Social capital and sense of community
	5.1.2 Comfortability	intangible	Students, Workforce, KAMK, KAO	Work and studying places are tidy and motivated for studying/working. People prefer to stay on Campus.	More spontaneous encounters are possible.		
Campus area	5.2.1 Shared bikes	tangible	Students, Workforce, companies	No need to buy your own	reduced costs, more sustainable choices	5.2 Possibility to develop a sustainable future	5. Social capital and sense of community
	5.2.2 Shared cars	tangible	Students, Workforce, companies	No need to buy your own	reduced costs, more sustainable choices		
	5.2.3 Agricultural plots	tangible	Students	Food from own plot, more sustainable choices	living costs decrease, community spirit rises,		
Mamselli	5.2.4 Food waste	tangible	Students	Students buy waste food easily and in a cheaper way	More sustainable food production, reduced living costs	5.2 Possibility to develop a sustainable future	5. Social capital and sense of community
	5.2.5 Developing Recycling Activities	both	Technical Sector, KAMK, KAO	Developed recycling facilities in the Campus area	efficiency reduced costs		
Project team	5.2.6 Developed recycling facilities	tangible	KAO	A more sustainable way to produce services	reduced waste handling costs, efficiency, sustainability increases	5.2 Possibility to develop a sustainable future	5. Social capital and sense of community

Technical sector	5.2.7 Expertise and consulting in environmental matters	intangible	Project team	Decisions are more sustainable	Decisions are more sustainable	5.3 Social life and feeling of belongingness
	5.3.1 Attractive and innovative environment for studying	tangible	Students and Companies	Motivated students, Good and healthy working conditions, new ideas and connections.	students feel more comfortable in their studies and attachment increases, satisfies customers and long-term lease agreements, innovations, networking	
Campus area	5.3.2 Place to hang out	intangible	Customers	Spontaneous encounters, a possibility for networking,	Lower boundaries to interact and communicate with strangers, and new friends, Community spirit rises,	5.4 Spare-time activities
	5.3.3 After-school activities,	intangible	Students	making new friends, more active spare time.	Students feel more comfortable in <u>Kajaani</u> and attachment increases, community spirit rises, and well-being is secured.	
Mamselli	5.3.4 Comfortability	intangible	students, Workforce, KAMK, KAO	Work and studying places are tidy and motivated for studying/working, People prefer to stay on Campus.	More spontaneous encounters are possible.	
Campus area	5.4.1 After-school activities,	intangible	Students	making new friends, more active spare time,	Students feel more comfortable in <u>Kajaani</u> and attachment increases, community spirit rises, and well-being is secured	
KAO, Highschool	5.4.2 Events	tangible	Students	Active spare time activities	Community spirit increases, Active spare time increases	

4.2.7 Strong municipal economy

The Value network analysis shows that a strong municipal economy is the most significant component, and it was targeted with 33 transactions. These deliverables are divided into four themes: 6.1) Balanced finances to cover expenses, 6.2) More citizens to the area, 6.3) More companies to the area, 6.4) Turn region's migration loss into migration gain. The most significant theme of this component is theme 6.1, with 13 deliverables. The second is theme 6.3, with ten deliverables. The third is theme 6.2 with seven deliverables and the fourth theme 6.4 with the three deliverables.

A balanced economy is a prerequisite for all activities and the development of vitality because without funding, activities cannot be organized. The municipality needs to attract more taxpayers (companies and residents) so that there is enough money to organize public services. The Kajaani Campus project aims to contribute to this, to attract new companies to the area and to keep the young population from leaving the area. From the perspective of this component and its central importance, this view of one interviewee regarding vitality (p. 50) as a region's turnover is justified.

Table 8. Value creation for a strong municipal economy

Mapping			Value network analysis				
Exchanges			Value flow		Impact	Value creation	
Comes from (roles)	Deliverable	Type of deliverable	Goes to (roles)	What activities might the input generate?	What is the possible outcome?	What is the goal? What is the network trying to achieve?	Which component of Vitality is affected?
KAMK	6.1.1 Co-operation	both	KAO	real-life practice, educational cooperation, shared vacancies, and services	Efficiency, reduced costs	6.1 Balanced finances to cover expenses	6. Strong municipal economy
	6.1.2 Customers	tangible	Mamselli	Food and cleaning services are from the one provider	Stable income, efficiency		
	6.1.3 Co-operation, student work,	both	KAMK	real-life practice, educational cooperation, shared vacancies and services, pathway studies to higher education	Efficiency, reduced costs,		
KAO	6.1.4 Customers	tangible	Mamselli	Food and cleaning services are from the one provider	Stable income, efficiency		
	6.1.5 Cleaning-services	tangible	Campus area, KAO, KAMK	Food and cleaning services are from the same service provider,	reduced costs, efficiency, study, and environments keep tidy, and customers feel comfortable		
Project team	6.1.6 Developing recycling activities	both	Technical Sector, KAMK, KAO	Developed recycling facilities in the Campus area	efficiency, reduced costs		
	6.1.7 Property management	tangible	Technical sector	Property management gets easier and more efficient	efficiency, reduced costs		

	6.1.8 Developed recycling facilities	tangible	KAO	A more sustainable way to produce services	reduced waste handling costs, efficiency, sustainability increases	
	6.1.9 Opportunities for cooperation in the security work, joint personnel training	tangible	KAMK, KAO	possibilities to co-operate increases to another level	reduced costs, efficiency	
	6.1.10 Repositioning the current services	tangible	KAO	Services become more accessible to customers	More customers, more income, more satisfied customers	
Students	6.1.11 New customers, income	tangible	KAO, KAMK			
	6.1.12 Income	tangible	Mamselli	More customers, more income	More jobs needed	
Technology Center	6.1.13 Takes part on finances	tangible	Project team	Project continues and Campus area develops	The new property is in optimal use	
	6.1.14 customer guidance for real estate	intangible	Campus Area	New companies are interested in locating to the area	Facilities are in purposeful use	
Citizens	6.2.1 Students	intangible	KAO, KAMK, Highschool, Kajaani University Consortium	the educational pathway from nursery to Higher Education	Citizens stay in Kajaani	6.2 More citizens to the area

	6.2.2 New citizens to Kajaani	tangible	City of Kajaani	More work, more income via taxes, more cost via services	population increases, from moving loss to moving profit
Educational institutions	6.2.3 Students, customers, future workforce	tangible	network	More opportunities and reasons to stay	Young people stay in Kajaani
Highschool	6.2.4 Dual career	tangible	Students, Third sector	Athletes can do both: study and train efficiently	Athletes stay in the area
KAMK	6.2.5 Dual career	tangible	Students, Third sector	Athletes can do both: study and train efficiently	Athletes stay in the area
KAO, Highschool	6.2.6 Pathway studies	tangible	KAMK, Kajaani University Consortium	After secondary education, students continue their studies in higher education.	Young people stay in Kajaani.
Vitality services	6.2.7 Marketing and Communication	tangible	City of Kajaani	Kajaani attracts companies to the area, Kajaani attracts new citizens	The attractiveness of Kajaani increases, from moving loss area to move in profit, more citizens. More income via taxes
	6.2.8 Financing, procurements	tangible	Project team	Campus Project will be done; Campus area is developed	Kajaani attracts people to move in and companies to locate, efficiency and lower costs
	6.2.9 Employment and international services	tangible	Campus Area	New national and international students, Adulte duration	
	6.2.10 Marketing and Communication	tangible	Campus Area	The campus attracts students and companies	More people and companies come to the area.

Workforce	6.2.11 Becomes a citizen	tangible	City of Kajaani	More citizens	The attractiveness of Kajaani increases, from moving loss area to move in profit, more citizens. More income via taxes	6.3 More companies to the area	6.4 Turn the region's migration loss to migration
Ely-Center	6.3.1 Financing	tangible	Vitality services	Campus development continues	Campus becomes an attractive place for students and companies		
KAO	6.3.2 Future Workforce	tangible	Companies	Hiring new staff gets easier	Companies stay in the area		
Project team	6.3.3 A new kind of business center concept	tangible	Kajaani Technology Center	Attract new businesses in the area	Kajaani becomes more attractive for companies		
Technology Center	6.3.4 Takes part in finances	tangible	Project team	Project continues and Campus area develops	The new property is in optimal use		
Vitality Services	6.3.5 Financing, procurements	tangible	Project team	Campus Project will be done, Campus area is developed	Kajaani attracts people to move in and companies to locate, efficiency and lower costs		
	6.3.6 Marketing and Communication	tangible	Campus Area	The campus attracts students and companies	More people and companies come to the area,		
	6.3.7 Marketing and Communication	tangible	City of Kajaani	Kajaani attracts companies to the area, Kajaani attracts new citizens	The attractiveness of Kajaani increases, from moving loss area to move in profit, more citizens. More income via taxes		
Citizens	6.4.1 New citizens to Kajaani	tangible	City of Kajaani	More work, more income via taxes, more cost via services	population increases, from moving loss to moving profit		

4.3 Value creation

The roles are defined in Chapter 4.1. The Value network analysis and its findings are introduced in Chapter 4.2. In this chapter, we first take a short return to the mapping phase and add the deliverables to the map. Then, we take a closer look at the value flow and value creation process of this network.

Figure 12 demonstrates how to add deliverables to the map. The vitality component of public and commercial services is used as an example. As can be seen from previous tables (from Table 3 to Table 8), every deliverable has an individual code in front of it. This code is assigned to each deliverable after completing the value network analysis. The first number of the code tells which vitality component this deliverable is connected to. The second number of the code tells which impact the deliverable connects to, and so on. The arrows have the same codes. Table 6 and its section 4.3, “Housing options are diverse and affordable,” is used as an example. This section includes five deliverables. Coded arrows demonstrate these deliverables. Each arrow is placed on the map based on who it is from and to whom it goes. The color of the arrow depends on whether the deliverable is tangible or intangible, whether it has elements from both, or whether it is about exchange.

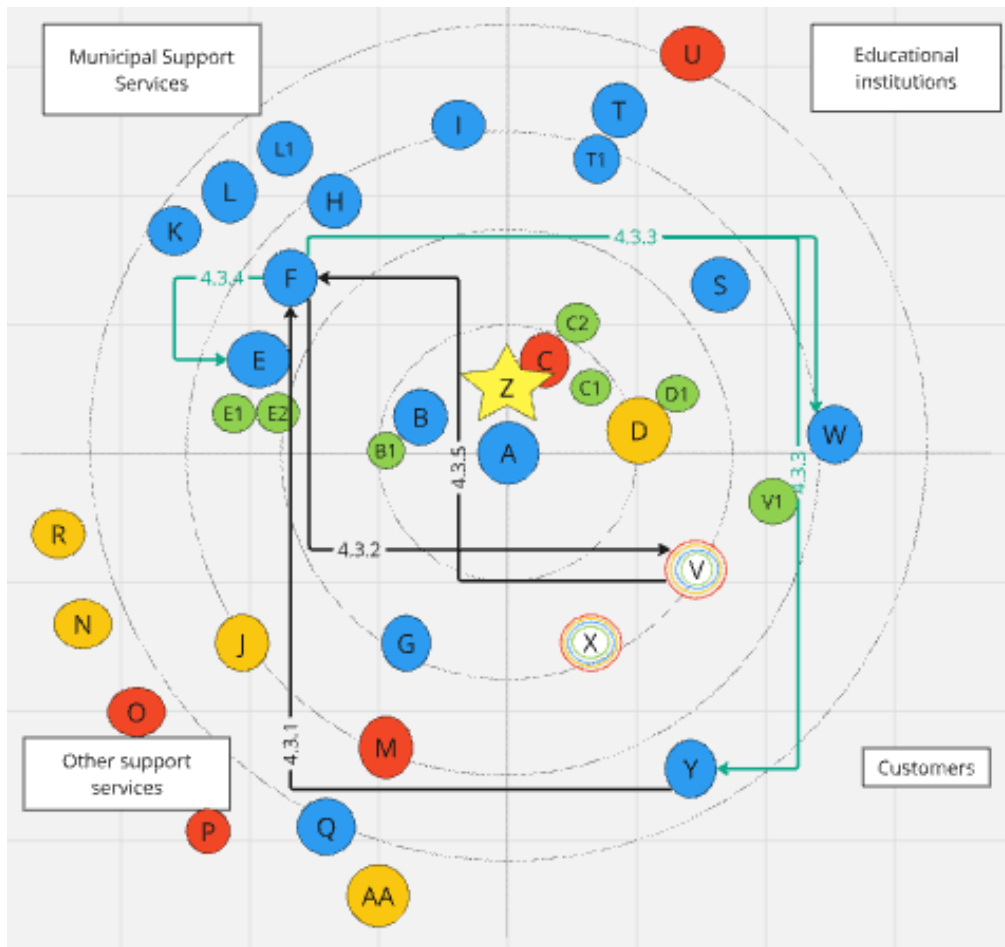


Figure 12. Example of mapping.

However, it is relevant to note that the completed value network map does not fit well on A4-sized paper. In total, there are 144 deliverables from 37 different roles. Figure 13 demonstrates the whole value network map and how it would look after adding all the deliverables to it. It is not readable anymore, and it is confusing. But if we take a closer look at it (Figure 14). We can see that it still includes coded and colored arrows, as in Figure 12.

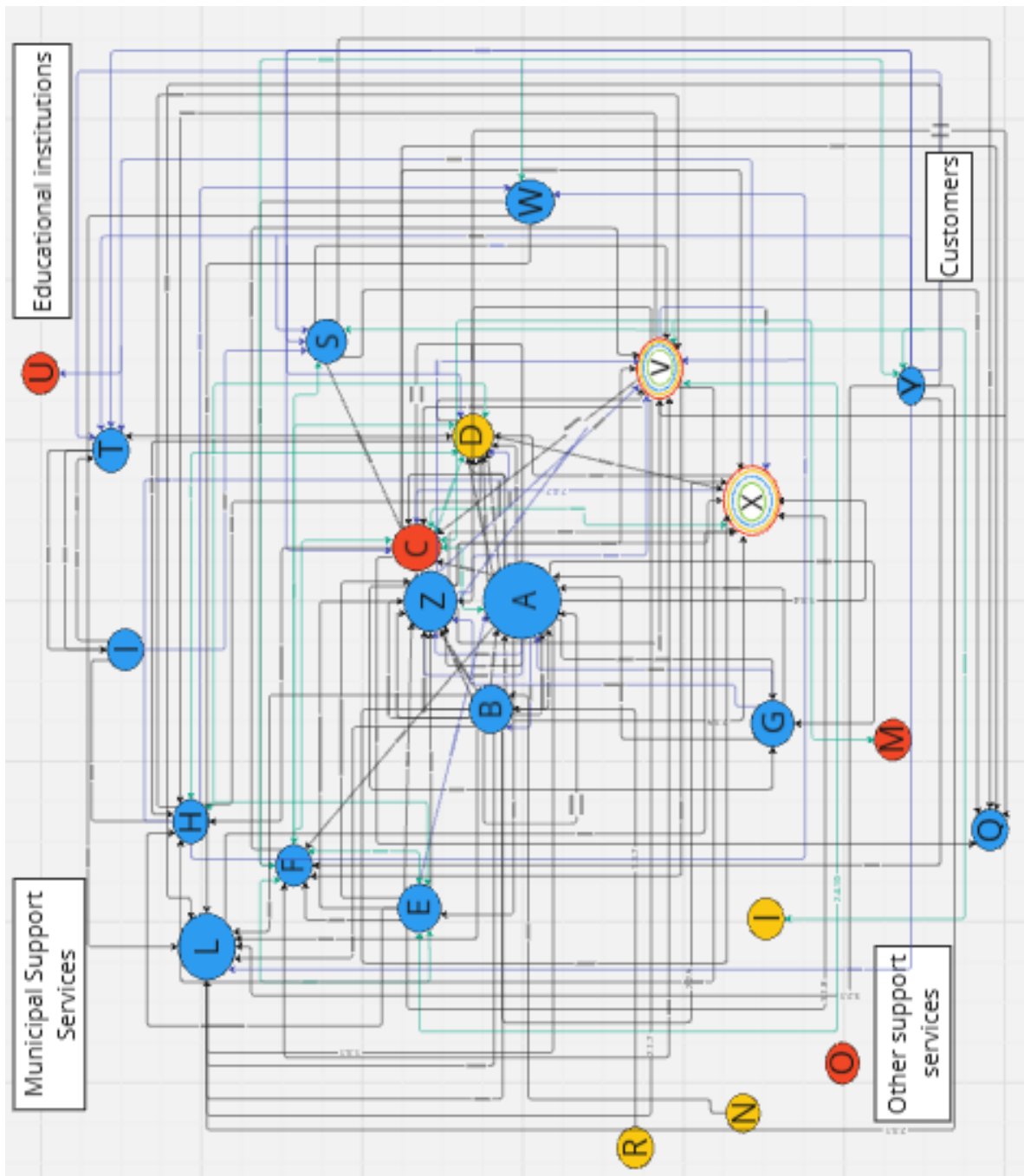


Figure 13. Value network map of the Kajaanin Kampus 2025 network

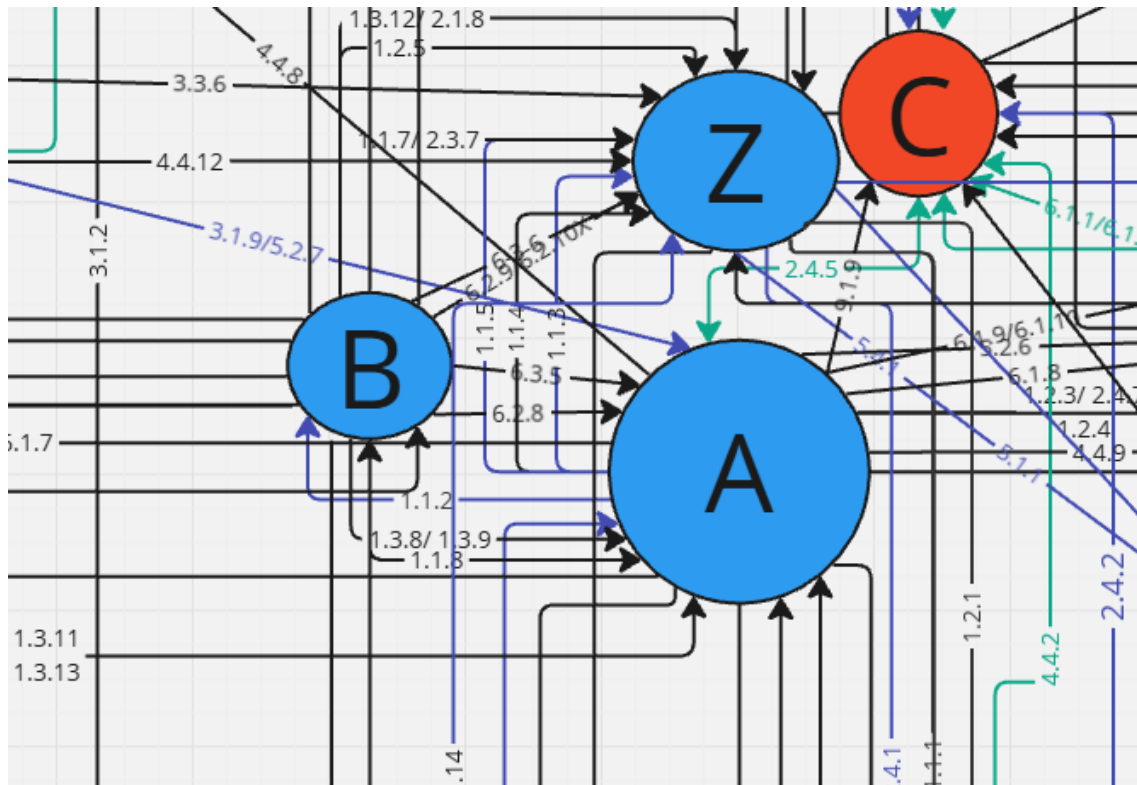


Figure 14. Zoomed network map

Well, it is still difficult to read. However, readability is not the main point of it. The map still demonstrates the centrality of the roles. More arrows are pointing from and to central roles than roles on outer levels. Colored arrows demonstrate that there are tangible and intangible deliverables between roles. It still visualizes that a lot of deliverables are moving, and through these exchanges, value flow occurs. All deliverables have a goal and purpose. These create an impact that can affect vitality or one of its components. Figure 15 summarizes it well. It demonstrates how the data sequencing is done, but it also demonstrates how value flows and how the Kajaanin Kampus 2025 network creates value. In total, we have 38 roles that, in this analysis, deliver 144 deliverables. These deliverables are analyzed based on what the goal and possible outcome of it are. The impact of the deliverable is defined based on the goal and possible outcome of it. These impacts are grouped under vitality components.

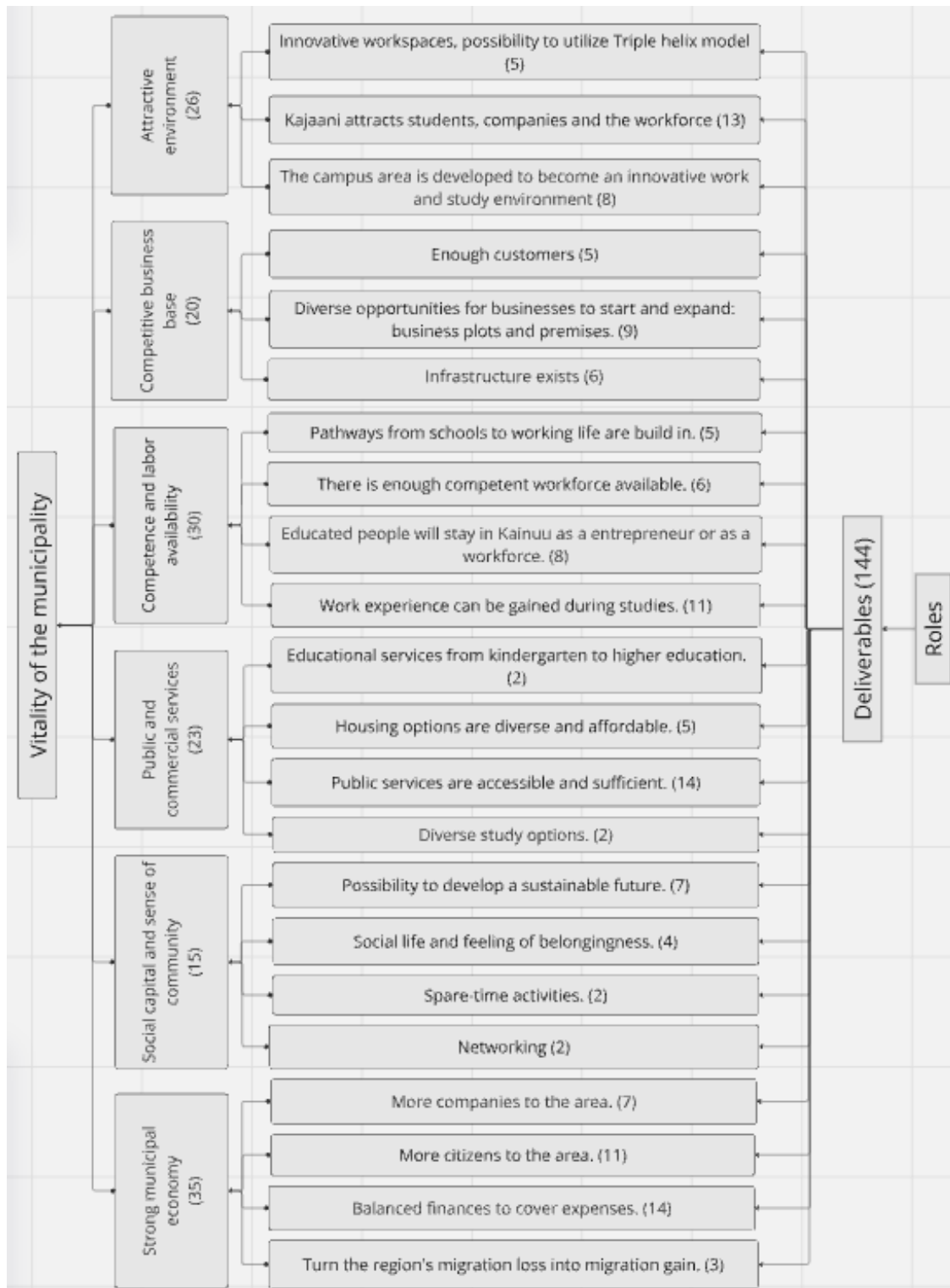


Figure 15. The value creation process.

5 Discussions

Allee's (2002) Value Network Analysis (VNA) was used in the Kajaani Campus 2025 project. For this study, a public value ecosystem model was created alongside it and integrated into Allee's VNA to add three-dimensionality and depth to the analysis. Section 5.1 reviews the theoretical contributions of the study within this framework and examines how VNA and the public value ecosystem model are applied to research on the development of municipal vitality. Section 5.2 examines the administrative implications of the findings. In addition, section 5.3 discusses the limitations of the study and considers how different factors may have influenced the results, as well as providing suggestions for future research.

5.1 Theoretical contributions

No previous studies were found that examined the creation of municipal vitality through Allee's (2002) value network analysis. Based on this study, it can be reasonably claimed that Allee's (2002) value network analysis (VNA) is also suitable as a method for this purpose. Value network analysis showed that the value network of the Kajaani Campus 2005 project produces vitality and is able, at least in theory, to have a positive impact on strengthening the vitality of the area through its transactions.

The public value ecosystem model was created for this study. It is based on the Network management model of Möller et al. (2004) and Trischler and Westman Trischler's (2022) public service ecosystems models. It was created to bring three-dimensionality to the examination of the network and thereby also depth to the analysis. As mentioned at the beginning, Möller et al. (2004) saw the three-dimensional examination of networks as increasing the understanding of the concepts of networks. Although in this study, the illustration of the three-dimensional map on paper did not quite succeed in the expected way, the increase in three-dimensionality proved to be what was intended in its use. The

roles on the map, colored according to different levels, successfully illustrate the level of the role in question. Utilizing this is necessary. Especially in the public sector, whose networks often include actors from all different levels: national, regional, local, and individual. This three-dimensional examination helps to understand how regional development can be done in the area, at what level which decisions are made, and what restrictions each party may have on operating in the network. Of course, this also requires an understanding of municipal decision-making and legislation.

This created model could also be used in a more detailed examination of vitality. For example, a single component of vitality could be taken into consideration, such as Social Capital and sense of community. In this case, the map could go into more detail, and the analysis could be done at the individual level. The angle of view could also be changed from the organizational level to the individual level. Using the model would also enable the experience of vitality from the perspective of, for example, residents or students.

This time, the network participants did not conduct the value network analysis themselves, but the perspectives they raised in the interview were used in the analysis. However, it would be better if the network itself conducted this analysis, as this would allow it to identify previously undetected and new value streams. Possible obstacles to the realization of the flows would also be easily identified, and ways to remove them could also be found during the analysis. This would also enable role-level assessment of, for example, value impact.

5.2 Managerial implications

Sallinen (2017) noted that fostering vitality typically involves developing the local business environment. An increase in businesses leads to more job opportunities, attracting more residents and boosting tax revenues. With higher tax revenues, municipalities can enhance services for their residents. According to Sallinen (2017), municipalities must

have a stable foundation to drive economic growth, create jobs, and generate tax income. Additionally, municipalities should identify and leverage their strengths in long-term strategic planning. Vitality can also be bolstered through competitive and cooperative networks. (Sallinen, 2017). The value network analysis showed that several actions are being taken in the Kajaani Campus 2025 network that promote the prerequisites for business environment development in the area. The analysis also showed several actions that targeted the Strong municipal economy component.

A slightly smaller number of deliverables were targeting the Social Capital and Sense of Community component. Based on the interviews, only 15 deliverables were targeted at this component. However, based on the customer satisfaction survey (Myllymäki, 2023), young people considered leaving the Kajaani area mainly because they thought there was not enough activity for their free time. To attract and retain students in the area, it would be good to also take a sense of community, social capital, and meaningful free time into consideration. Therefore, involving students in the planning process is essential. In addition, the joint development of the campus area and vitality required the involvement of municipal sports and cultural service providers and third sector actors who provide these services.

The development of the campus area itself already supports the argument of Luoto and Virkkala (2017) that smart specialization is a place-specific development that aims to renew and expand regional economies by strengthening research, development, and innovation activities. The Kainuu region also supports this idea (Kainuu region, 2021). One way could be to develop this entity as another project separate from the Kajaani Campus 2005 project. For example, could the gaming industry, which Kajaani's educational institutions have a lot of interest in, be an area in which to promote this?

As stated earlier, the analysis could also have been commissioned by the network itself. In this case, more value could have been gained from the analysis. The analysis could

also have benefited the network itself better. On the other hand, the network members can jointly review the data collected from the interviews and add things to it afterward. This can also help the network to further refine the analysis. The project management team can also assess the power of the impacts if desired.

Overall, the network's cooperation in understanding this entity can be seen as very important to avoid sub-optimization. Can it be assumed that when network members see the benefits of each deliverable for different roles, such sub-optimization can be avoided? On the other hand, could it be in this case that if the cooperation between the roles (organizations) of the network does not work properly, it may also happen that the actors try to pick only the "raisins from the bun"? This can be detrimental to the whole. Effective cooperation should ensure that everyone understands that the development of Kainuu and the Campus area is a common interest and a prerequisite for future operations. Currently, the project has a project manager and a project team, who are largely responsible for the network's facilitative operations. It would be interesting to see what happens in the future. How will the collaboration develop when the project ends and the network facilitator leaves?

5.3 Limitations and suggestions for future research

This study has certain limitations. The number of interviewees was relatively small, and one did not take part. For instance, a larger sample size would have provided a more reliable foundation for the study. The absence of one Kajaani Campus 2025 management team member might affect the study's reliability. However, the gaps were filled by consistent responses from other participants. The study involved ten people. From a research perspective, it would have been beneficial to interview more individuals outside the management team. Currently, only two project coordinators represent this group. On the other hand, this sample provided a substantial amount of data. There were challenges in fitting this data onto the value map. Documenting the network map in three

dimensions was more difficult than anticipated. While modern technology could facilitate this, I encountered limitations in my expertise. Nevertheless, examining the two-dimensional map with colored dots alongside the public value ecosystem model offers a good representation of the potential three-dimensional map. It effectively illustrates the intended points. The network includes actors at all levels, adding depth to the study and enhancing the understanding of both strategic and operational aspects.

In retrospect, it is good to consider whether the results would have been significantly different if the value network analysis had been carried out by the project management team. There is no way to know for sure. However, it would be interesting to conduct a follow-up study for the period after the project, and to investigate which of the planned measures have been implemented, how the vitality of the area has increased, and how, for example, students, residents and companies in the area perceive the development of the campus area as successful. One way could be to study the development of vitality in terms of a single component of vitality. For example, students' experiences of a sense of community on Campus and its joint development. The development of Triple Helix-type cooperation on Campus could also be an interesting subject for further research.

The public value ecosystem model and value network analysis work well together in this study. One idea for further research could be to explore how this works together in another value network that seeks to strengthen vitality. Would this model work in another city? Are there differences in the corresponding value networks of large and small cities? One interesting topic would also be the risk of sub-optimization related to value networks.

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Appendices

Appendix 1. Job announcement

Jos Kainuulaatuinen kampuskehittäminen kiinnostaa, niin astu Kajaanin aikavyöhykkeelle.

Kajaani sijaitsee keskellä Suomea upeissa vaaraimaisissa järvien ympäröimänä. On todistettu, että kaupungissa vuorokautteen mahtuu 26 tuntia. Ylimääräisen ajan voit käyttää perheeseen, sukulaisiin, ystäviin, omiin harrastuksiin. Kajaanissa sinulla on aikaa tehdä sitä mitä haluat, kasvaa ja unelmoida. Kajaanin ajassa on mahdollista toteuttaa asioita, joista ruuhkakaupungeissa voi vain haaveilla. Aikamme sopii sinulle, joka haluat työn lisäksi nauttia vapaa-ajasta. Lue lisää: www.kajaani.fi/267

Etsimme Kajaanin kampus 2025-hankkeeseen projektipäällikköä

Kajaanin kampuksella on 6000 opiskelijaa ja 600 työntekijää Kajaanin Vimpelinlaakson kampusalueella, jossa sijaitsevat Kainuun Ammattiopisto ja Kajaanin Ammattikorkeakoulu sekä Kajaanin Lukio. Oppilaitosten vetovoima on vahva, ja uudet koulutusavaukset lisäävät opiskelijoiden määrää lähivuosina. Oppilaitosten sijainti lähekkäin mahdollistaa aivan uudet vetovoimaiset koulutuspolut.

Tavoitteena on kehittää Kajaanin koulutuskeskittymä vetovoimaiseksi oimintakeiseksi Piilaaksoksi, joka houkuttelee opiskelijoita, osaajia, yrityksiä ja koulutusta hyödyntäviä toimijoita. Yritysten ja muiden kumppanien sijoittuminen kampukselle avaa uusia opiskelun ja työn yhdistäviä ratkaisuja. Uusilla tilaratkaisulla, halutuilla arjen ja asumisen palveluilla, kampuskulttuurilla sekä kauniilla ulkoalueilla kampuksesta tehdään viihtyisä ympäristö opiskelulle, työlle ja kumppanuuksille. Green Kampus -teemalla kampus tekee omaa vihreää siirtymäänsä.

Mitä tarjoamme?

Tarjoamme ainutkertaisen, itsenäisen ja monipuolisen tehtävän kaupungin elinvoiman kehittämisessä. Tukenasi toimii hankkeen johtoryhmä, jossa ovat mukana kaikkien työläsi olennaisten organisaatioiden johtajat. Saat käynnistää kampuskehittämisen, kartoittaa uusia toimintamalleja, suunnitella tila- ja palveluratkaisuja, kontaktoida uusia kumppaneita, tukea oppilaitosten yhteistyötä ja etsiä alueen vihreitä energiaratkaisuja. Ja mitä kaikkea muuta ideoitkaan poikkialinnollisen johtoryhmän kanssa. Tavoitteena on saada aikaan näkyviä tuloksia jo hankkeen aikana ja kivetä polku jatkekehittämiselle.

Mitä odotamme?

Odotamme Sinulta kykyä tunnistaa ja ottaa haltuun kehittämiskokonaisuuksia ja viedä niitä tuloksekkaasti projektina eteenpäin. Onnistuminen edellyttää hyviä vuorovaikutus- ja verkostotaitoja sekä kokemusta, miten yhteistyöllä luodaan vaikuttavia ratkaisuja. Laaja-alaisen työn perusosaamisen voivat antaa useat erilaiset koulutustaustat. Näkemys koulutuksen kentästä on eduksi, ja koska on kyseessä tavallisuudesta poikkeava tehtävä, niin siinä edesauttaa luovuus, idearikkaus ja ennakkoluulottomuus. Kansainvälistyvällä kampuksella työskentely edellyttää hyvän suomen kielen lisäksi vähintään englannin kielen hallintaa.

Missä työskentelisit?

Kuulut kaupungin konsernipalvelujen elinvoimapalvelujen tulosityksikköön. Meitä on neljäkymmentä asiantuntijaa maakunnan aluekehityksen ytimessä. Kajaanin kaupunki on aktiivinen oman toimintansa ja henkilöstönsä kehittäjä, ja keskuskaupunkina olemme usein maakunnan moottori. Työpiste on pääsääntöisesti kampuksella, mutta työ onnistuu myös kaupungintalolla. Toimit johtoryhmän ja kaupungin päättäjien ohjausryhmän valmistelijana. Meillä etätyö on mahdollista, joustavasti siitä sopien.

Palkkaus on KVTES:n mukainen lähtien 4200 euroa/kk työkokemuksesta ja osaamisesta riippuen. Työsuhde on kolmivuotinen työn aloittamishetkestä lukien. Tehtävässä on kuuden kuukauden koeaika.

Innostuitko? Silloin hae tehtävää viimeistään 3.3.2023 klo 15 mennessä. Odotamme jo yhteydenottoasi!

Hae työpaikkaa sähköisesti osoitteessa www.kuntarekry.fi. Työhakemuksen voi toimittaa myös postitse osoitteeseen: Kajaanin kaupunki, Kirjaamo, PL 133, 87100 Kajaani. Kuoreen merkintä "Kajaanin kampus 2025-hankkeeseen projektipäällikkö".

Lisätietoja

<http://www.kajaani.fi>

TUTUSTU TYÖNANTAJAAN >

Appendix 2. Survey questions in Finnish

Kajaanin Kampus 2025 Arvoverkostotutkimus

Kysely on osa Sari Slawutan strategisen johtamisen Pro Gradu tutkielmaa aiheesta "Value Network Analysis in Public Sector, Case study of How Vitality is Created in Kajaanin Kampus 2025 project".



* Pakollinen

Taustatiedot

Tämä ensimmäinen osio sisältää kysymyksiä sinusta ja niitä käytetään tutkimuksessa taustatietoina.

1. Mikä on nimesi? *

2. Kuinka vanha olet? *

- 18-25 vuotias
- 26-35 vuotias
- 36-45 vuotias
- 46-55 vuotias
- 56-65 vuotias
- en halua kertoa

3. Oletko sukupuoleltasi *

- mies
- nainen
- en halua kertoa

4. Mikä on korkein koulutustasosi? *

- Lukio
- Ammattikorkeakoulututkinto
- Kandidaatintutkinto
- Maisterintutkinto
- Tohtorintutkinto
- En halua kertoa
- Muu

Kajaanin kampus 2025- kehittämishanke, organisaatiot

Tämän osion kysymykset koskevat toimialasi/organisaatiosi roolia Kajaanin Kampus 2025 kehittämishankkeessa.

5. Mitä organisaatiota ja/tai sen toimialaa edustat Kajaanin Kampus 2025 hankkeen verkostossa? *

6. Edustaako organisaatiosi *

- Julkista sektoria?
 Yksityistä sektoria?

7. Mitkä valtakunnalliset ministeriöt ohjaavat merkittävimmin edustamasi toimialan toimintaa? *

- Ulkoministeriö
 Oikeusministeriö
 Sisäministeriö
 Puolustusministeriö
 Valtionvarainministeriö
 Opetus- ja kulttuuriministeriö
 Maa- ja metsätalousministeriö
 Liikenne ja viestintäministeriö
 Työ- ja elinkeinoministeriö
 Sosiaali- ja terveysministeriö
 Ympäristöministeriö

8. Onko edustamasi organisaatio *

- Paikallinen toimija (Toimintaa lähinnä Kajaanissa)?
 Alueellinen toimija (Toimintaa pääsääntöisesti Kainuun alueella)?
 Kansallisen tason organisaatio (Toimintaa laajasti koko Suomen alueella)?
 Kansainvälinen organisaatio?

9. Mikä on ammattinimikkeesi kyseisessä organisaatiossa? *

Verkostotoimijat

10. Kuinka keskeisenä toimijana koet oman organisaatiosi Kajaanin Kampus 2025 hankkeen verkostossa?

1= ei lainkaan keskeinen 3= neutraali 5= todella keskeinen

1	2	3	4	5
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11. Kuinka keskeinen toimija **Kajaanin kaupungin elinvoimapalvelut** on mielestäsi tässä verkostossa? *

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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12. Kuinka keskeinen toimija **Kajaanin kaupungin tekninen toimiala** on mielestäsi tässä verkostossa?

1= ei lainkaan keskeinen 3= neutraali 5= todella keskeinen

1	2	3	4	5
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13. Kuinka keskeinen toimija **Kajaanin kaupungin sivistyksen toimiala** on mielestäsi tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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14. Kuinka keskeinen toimija **Kajaanin Mamselli** on mielestäsi tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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15. Kuinka keskeinen toimija **Kajaanin Pietari** on mielestäsi tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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16. Kuinka keskeinen toimija **Kajaanin teknologiakeskus** on mielestäsi tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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17. Kuinka keskeinen toimija **Kajaanin Ammattikorkeakoulu** on mielestäsi tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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18. Kuinka keskeinen toimija **Kajaanin kaupungin koulutusliikelaitos** on mielestäsi tässä verkostossa? *

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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19. Kuinka keskeinen toimija **projektipäällikkö Veera Valtanen** on mielestäsi tässä verkostossa? *

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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20. Millä verkostotoimijalla on tässä verkostossa eniten valtaa? *

- Kajaanin kaupungin elinvoimapaalvelut
- Kajaanin kaupungin tekninen toimiala
- Kajaanin kaupungin Sivistyksen toimiala
- Kajaanin Mamselli
- Kajaanin Pietari
- Kajaanin Ammattikorkeakoulu
- Kajaanin kaupungin koulutusliikelaitos
- Projektipäällikkö Veera Valtanen
- en osaa sanoa/ ei kenelläkään

21. Jääkö jokin kehittämishankkeen kannalta keskeinen verkostotoimija johtoryhmän ulkopuolelle? *

- Kyllä
- Ei

22. Mitkä kehittämishankkeen keskeiset verkostotoimijat jäävät johtoryhmän ulkopuolelle? *

Numeroi toimijat seuraavasti: 1. verkostotoimija(ryhmän) nimi 2. verkostotoimija(ryhmän) nimi

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23. Kuinka keskeiseksi toimijaksi koet **nimeämäsi 1. verkostoimijan** tässä verkostossa? *

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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24. Kuinka keskeiseksi toimijaksi koet nimeämäsi 2. verkostotoimijan tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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25. Kuinka keskeiseksi toimijaksi koet nimeämäsi 3. verkostotoimijan tässä verkostossa?

1= ei lainkaan keskeiseksi, 3= neutraali 5= todella keskeinen

1	2	3	4	5
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26. Kuinka keskeiseksi toimijaksi koet nimeämäsi 4. verkostotoimijan tässä verkostossa?

1= ei lainkaan keskeinen, 3= neutraali 5= todella keskeinen

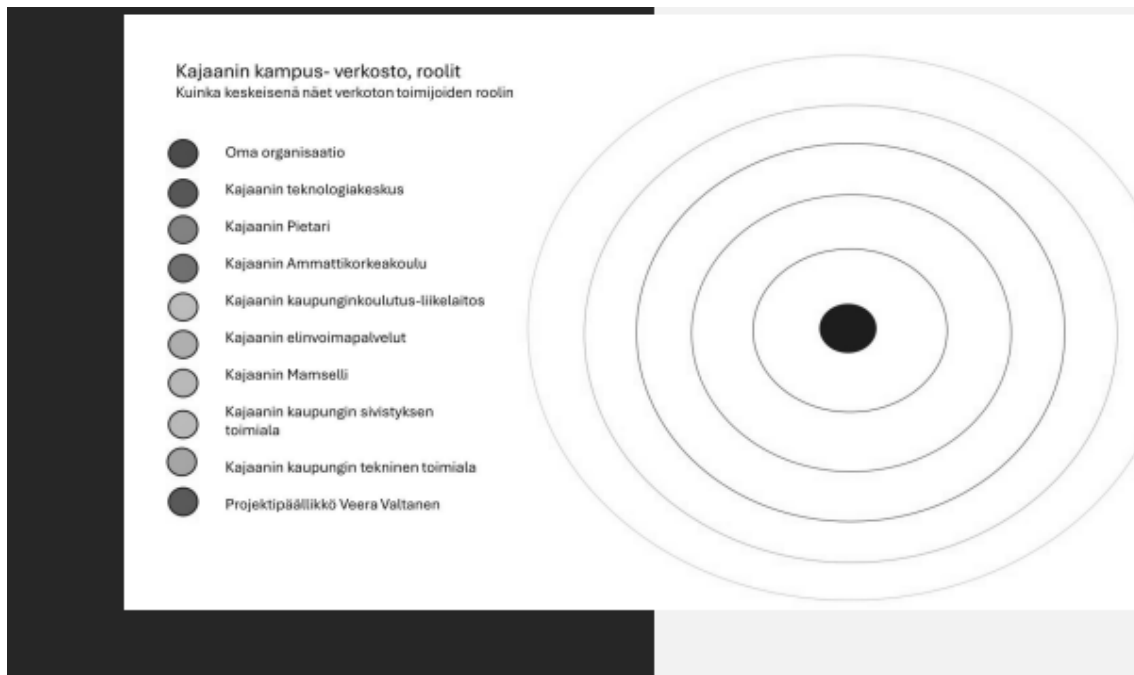
1	2	3	4	5
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Appendix 3. One-on-one Interview questions in Finnish.



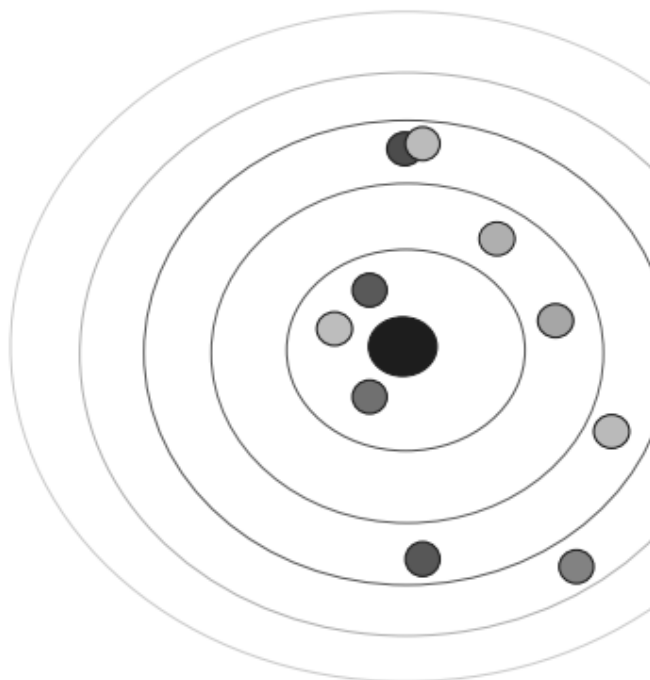
Kajaanin Kampus

- Kuka on/ ketkä ovat Kajaanin kampus hankkeen asiakas/asiakkaat?
- Mitkä ovat Kajaanin Kampuksen tuotteet/ palvelut, joita tuotatte näille asiakasryhmillenne?
- Mitä arvoa Kajaanin kampus tuottaa asiakasryhmillenne?
- Mitä lisäarvoa sen halutaan tuottavan asiakasryhmillenne tulevaisuudessa?



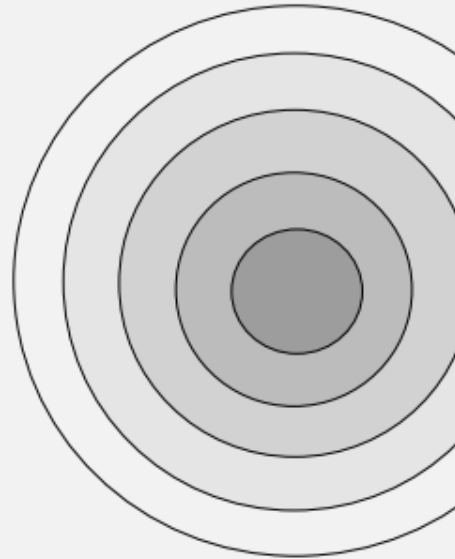
Kajaanin kampus- verkosto, roolit
Kuinka keskeisenä näet verkoton toimijoiden roolin

- Oma organisaatio
- Kajaanin teknologiakeskus
- Kajaanin Pietari
- Kajaanin Ammattikorkeakoulu
- Kajaanin kaupunginkoulutus-liikelaitos
- Kajaanin elinvoimapaalvelut
- Kajaanin Mamselli
- Kajaanin kaupungin sivistyksen toimiala
- Kajaanin kaupungin tekninen toimiala
- Projektipäällikkö Veera Valtanen



Yhteistyötahot

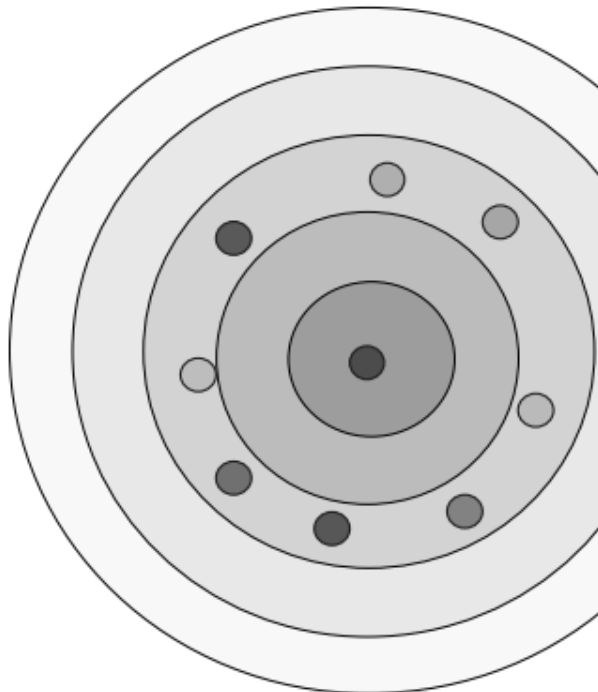
- Oma organisaatiosi on tässä keskellä. Miten sijoittaisit verkoston muut toimijat ympyrän kehille sen mukaan, että kenen kanssa teet verkostossa eniten yhteistyötä on sinua lähinnä.



Yhteistyö

Kenen kanssa organisaatiosi tekee eniten yhteistyötä?

- Oma organisaatio
- Kajaanin teknologakeskus
- Kajaanin Pietari
- Kajaanin Ammattikorkeakoulu
- Kajaanin kaupunginkoulutus-liikelaitos
- Kajaanin elinvoimapaalvelut
- Kajaanin Mamselli
- Kajaanin kaupungin sivistyksen toimiala
- Kajaanin kaupungin tekninen toimiala
- Projektipäällikkö Veera Valtanen



Elinvoima

-
- Mitä elinvoima mielestäsi on?
 - Voiko Kajaanin kampus hanke mielestäsi vaikuttaa myönteisesti alueen elinvoiman kehittämiseen?
 - Miten?

Oma organisaatio verkostossa

-
- Miten kuvailisit oman organisaatiosi/toimialasi roolia Kajaanin Kampus hankkeen verkostossa?
 - Mitä tuotteita ja palveluita organisaatiosi tuottaa/ toimittaa tähän verkostoon?
 - Mitkä ovat organisaationne ns. Ydintoimintoja tässä kontekstissa?

Toiminnot verkostossa

Millaisia aineellisia tai aineettomia toimintoja (tuotteita/palveluita/suoritteita) organisaation tuottaa/ toimittaa verkostoon?

- Elinvoimapalveluille?
- Tekninen toimiala?
- Sivistyksen toimiala?
- Kajaanin Pietari?
- Kajaanin Mamselli?
- Kajaanin Ammattikorkeakoulu?
- Kajaanin kaupungin koulutusliikelaitos?
- Teknologiakeskus?
- Hankkeen projektipäällikkö Veera Valtanen?
- Verkostotoimija 1?
- Verkostotoimija 2?
- Verkostotoimija 3?
- Verkostotoimija 4?

Entä mitä toimintoja organisaationne ottaa vastaan ko verkostotoimijoilta?

Oman organisaatiosi verkosto

- Minkä tasolle ajattelet oman organisaatiosi sijoittuvan?
- Mitä Kajaanin Kampus hankkeen kannalta oleellisia / vaikuttavia ylemmän tason toimijoita/rooleja omassa verkostossasi on?
- Mitä Kajaanin Kampus hankkeen kannalta oleellisia / vaikuttavia alemman tason toimijoita/rooleja omassa verkostossasi on?

Valtakunnallinen taso /Ekosysteemi
Aluetaso / Maakunta
Paikallinen taso / Mies
Yksilötaso/Minä

Muut verkoston organisaatiot

Miten sijoittaisit Kajaanin Kampus hankkeeseen liittyvät organisaatiot tasoille?

Mille tasolle sijoittaisit muut hankkeen kannalta merkittävät toimijat/roolit?

Valtakunnallinen taso /Ekosysteemi t

Aluetaso / Macro t

Paikallinen taso / Meso t

Yksilötaso/Mikro t