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**How do incubators position themselves within the  
Triple Helix Model:  
Systemizing European incubator landscape and discussing  
implications for the local German incubator brigk**

Master Thesis for the Achievement of the Academic Degree

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Submitted by: Maximilian Aschka

Matriculation number: 00080782

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First examiner: Prof. Dr. Florian Huber

Second examiner: Prof. Dr. Martin Bader

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## Abstract

In the early stages, entrepreneurs encounter significant challenges and extreme uncertainty when founding a young innovative venture. In response to this, a spectrum of wide support mechanisms are available. Typically facilitated not in isolation, but rather through collaborative efforts involving multiple institutions within a startup ecosystem. An exemplary theoretical framework delineating auspicious collaborative efforts among multiple institutions to foster innovation, is the Triple Helix model. The primary objective of this thesis is therefore to analyze the positioning of European top incubator landscape within the Triple Helix Model and the support offers for startups resulting from the cooperation between incubator and a subsystem. Ultimately, implications for the local German incubator brigk should be described. In doing so, the conducted study employed a qualitative data analysis, leveraging 100 datasets within the data analysis software ATLAS.ti. By crawling the "About us" pages on incubators' websites, the methodology involved first-level paragraph coding based on the Triple Helix Model's subsystems. Subsequently, second-level codes were assigned following a consistent schema that highlighted the kind of collaboration. The final step involved the clustering of similar second-level codes, providing a nuanced understanding of the dimensional interaction between incubators and other institutions. The results show that cooperation's between the analyzed incubators and the three subsystems of the Triple Helix Model do exist. Besides the pronounced frequency of cooperation with the Economic Subsystem, the role reversal revealed by the analysis is a particularly interesting finding in this thesis. It shows that incubators themselves often take on the role of a subsystem to drive innovation. Looking at the results of this work in a broader context, it could represent a benchmark for individual institutions within Europe, improving their cooperation's with the players of the three subsystems. And in the long run, enhancing their offering and support to young innovative companies.

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Ever since I started my Entrepreneurship and Digital Business degree, I have always aimed to delve deeper into the subject area of start-up ecosystems, and I am very grateful to have this opportunity in the course of this thesis. Furthermore, I am really thankful to my family and friends who always supported me during my entire study.

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## List of Abbreviations

MVP

Minimum Viable Product

VC

Venture Capital

## 1. Introduction

In this introductory section, the personal motivation for this thesis is first introduced. Secondly, the goals including the research question are formulated and the structure and the approach are presented. Ultimately, the relevance of this thesis is addressed.

### 1.1 Motivation

When I started my position as incubator & coworking manager at brigk back in 2022, I learnt first-hand about the support services and structures available for founders in the Region 10. One of my tasks is to constantly create new impulses in the range of support offered. In addition to the best-known example of Silicon Valley, you quickly come across other institutions or locations that pursue the same goal of providing the best possible support for young innovative ventures. The question that quickly arose for me was whether there is a scheme for the offered support and the associated success such as in the case of Silicon Valley. In order to make the offered support comparable, the Triple Helix Innovation Model was used as a theoretical framework when analysing the top 100 incubators in Europe. The personal goal was to find out how the support offered by the institutions is put together and what potential there is to expand the service of brigk. As a result, this should lead to an even better support in Region 10, making this location even more attractive for founders in the future.

### 1.2 Goals

This thesis systematically examines an extensive array of scholarly sources pertaining to Startups, Incubators, Startup Ecosystems, and the Triple Helix Innovation Model. These sources constitute the foundational framework for conducting a qualitative analysis of 100 datasets, aiming to furnish a comprehensive perspective on the collaborative dynamics between incubators acting within Europe and the stakeholders of the Triple Helix Model. Thus, three research questions can be derived from this:

*Research Question 1:*

Can the top European incubators be systematically classified using the framework of the Triple Helix Model and its subsystems?

*Research Question 2:*

What type of collaborations between these incubators and the subsystems of the Triple

Helix Model do exist most prevalent, and how are they structured?

*Research Question 3:*

What recommendation for action can be drawn for individual local incubators, such as brigk, based on the insights gained from this thesis?

### **1.3 Structure and Approach**

The structural framework of this thesis is predicated upon its overarching research questions and the attendant objectives expounded previously. In the first part, the theoretical segment will unfold through an exhaustive literature review, encompassing a comprehensive examination of the areas: Startups, Incubators, the Startup Ecosystem, and the Triple Helix Model. These thematic elements are initially considered separately from each other to establish a foundational comprehension of the constituent subject matter, thereby furnishing a theoretical base upon which this thesis is constructed.

The second part, the methodology section, describes in detail the procedure of the collection and conversion, coding, and analysis of the secondary data set used from Crunch Base during the qualitative analysis. The third part intends to show the insights gained from the data and compare them with the current positioning of the local incubator brigk within the Triple Helix Model. Ultimately, in the last part of this thesis, actionable recommendations for brigk are given.

### **1.4 Relevance**

Looking at the support offered to young innovative ventures within Europe alone, it quickly becomes clear that there is a lot. Often centralized in so-called incubators, the type and nature of the support is commonly offered in cooperation with players of a startup ecosystem (Feld, 2020). However, there is still no comprehensive concept for this cooperations. Also in research, different types and manners can be seen, philosophizing about how the perfect environment should look like for innovation. So does the Triple Helix Model after Etzkowitz and Leydesdorff (2000) already address this phenomenon around the two-thousand years. Theoretically, these concepts and frameworks exist in parallel, but they have not yet been combined to design a measurable framework, in order to analyze the current state of the art offerings for startups, recommended to boost innovation. For this reason, this work is highly relevant, in that it analyses and evaluates the multitude of different support offers made

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by top European incubators in cooperation with the players of a startup ecosystem, respectively the subsystems of the Triple Helix Model. The aim is to create a kind of benchmark for the positioning of incubators, showing the common interactions with the Triple Helix subsystems. Ultimately, the insights gained will be used to derive recommendations for action for the local incubator brigk.

## 2. Theory basis

The first part of this thesis intends to establish a comprehensive theoretical foundation for the key topics that form the basis for this study. By delving into the relevant theories and concepts surrounding the areas Startups, Incubators, Startup Ecosystem, and the Triple Helix Model, this chapter sets the stage for a deeper understanding of the subsequent investigations and analyses conducted in this research.

### 2.1 Startup

The following chapter proposes to gain a theoretical understanding of the basic terminology of a startup. First, defining what a startup is, it will then delve into its lifecycle, looking at the various stages a startup goes through as it grows and evolves. To complete this chapter, a historical perspective on the evolution of the entrepreneurial mindset within startups will be given.

#### 2.1.1 Defining a Startup

In principle, anyone can set up a company. Countless types of corporate forms and ways do exist to earn money. And some are more successful than others in the market. However, not every newly founded venture can be named a startup. The term “startup” has been around for years. With this special type of venture, the founders, so-called entrepreneurs, often neither know the possible feasibility, the venture’s goals, nor even potential supporters for their intention. The actions taken in this uncertain environment resemble chasing an invisible goal (Busch & Barkema, 2020). Due to the great variety among these often-called life-changing problem solvers, a generally valid definition of this term does not exist. However, if one looks at publications made in this area, the following three characteristics are often mentioned (Bormans, Privitera, Novo, & Arrami, 2020/2021; Shepherd & Gruber, 2020):

- Startups are **young** ventures,
- striving for **exponential growth** within great uncertainty,
- by offering **highly innovative** products/services, business models and/or technologies.

Due to the very limited resources available and the resulting uncertainty a startup operates in, these “temporary” (Blank, 2013) and growth-oriented organizations try to find a rapid product/market fit. Unlike established companies led based on business planning, startups use an iterative approach driven by experiments to develop a repeatable and scalable business model (Contigiani & A Levinthal, 2019). In other

words, if hypotheses are incorrect, pivoting is essential for a startup to survive. One of the well-known practitioner- and customer-oriented frameworks in that context is called the “Lean Startup” framework, which was originated by Blank (2013) and further developed by Osterwalder and Pigneur (2010) and Ries (2019) in the following years.

### 2.1.2 The Lifecycle Phases of a Startup

Along the way, startups face different hurdles and tasks to prove the feasibility of their supplied products or services on the market. The activities to be accomplished by the founders, as well as their financing, can be clustered in different lifecycle phases (see Figure 1).

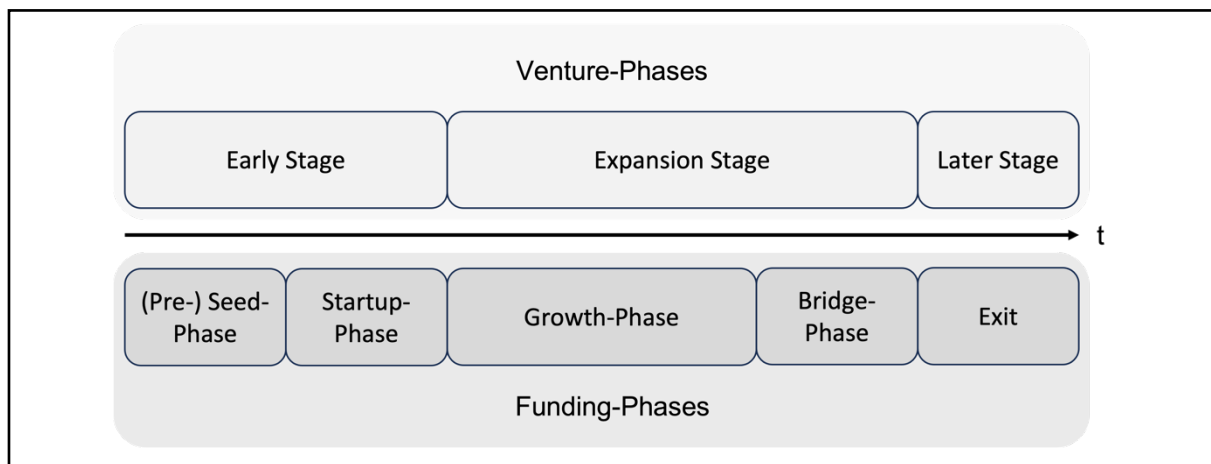


Figure 1: The Corporate and Funding Phases of a Startup  
Source: Based on Hahn (2022)

#### The Early Stage

The first stage of financing is referred to as the “Early Stage”. Due to the intended actions on the venture level, this stage can be subdivided into the Pre-Seed-, Seed- and Startup-Phase. Pre-Seed- and Seed-Phase describe the time before the initial founding, in which brainstorming, formulation and feasibility of an idea is considered. Further in the process, a resilient business plan, the pitch deck, the possible corporate form, as well as a first MVP (= Product version with minimum effort and development time) are drawn up (Ries, 2019, p. 74). During this period, small amount of capital is required, which can often be covered by family and friends. However, the entrepreneurial risk is at a high level, due to the lack of sales, profit, and small losses. Furthermore, it is not uncommon at this stage to “pivot”, i.e., a realignment of the initial direction based on the knowledge gained from early adopter (Ries, 2019, p. 133).

The initial founding and strategic orientation of the startups take place in the Startup-Phase. Further the validated product or service is launched on the market, and thus

first small sales are made. With increasing operational activities, looking for funding is on the agenda. Characterized by the needed recourses, whether purely financial or also entrepreneurial know-how, called “smart money”, two common sources of early-stage financing can be distinguished: The VC (Venture Capitalist) and the Business Angel (Hahn, 2022; Hsu, Haynie, Simmons, & McKelvie, 2013).

### **The Expansion Stage**

After the previous proof of concept and the launch on the market, the “Expansion Stage” is about scaling. Congruent to the Early Stage, the Expansion Stage can also be sub-clustered into the Growth- and Bridge-Phase. The aim of the Growth-Phase is to reach the Break-Even, the point in time where profit exceeds losses for the first time, or the amortization of the initial losses occurs. For this purpose, a venture’s outreach and operating cashflow must be expanded in advance. Measures for this are, for example, the development and expansion of the venture structure in the areas of management and human resources, as well as the expansion into national and international markets. The with that associated significant increase in sales often correlates with a decrease in product- and process-innovation at this stage. In contrast to the high capital required for these venture steps, the entrepreneurial risk in this phase is rather low.

If startups perform with above-average growth at this phase, they are referred as “High-Flyer”. A reuse of the Growth-Phase mechanisms is common in the Bridge-Phase to further expand into national or international markets and/or adapt new products or services. The intention of these applied growth measures is either an Exit (= departure of founders or investors as shareholders or decision makers in a venture) (DeTienne, 2010) or an IPO (Initial Public Offering) in the following Later-Stage (Hahn, 2022).

#### **2.1.3 The Roots of Entrepreneurship in the Startup Field**

The etymology of “entrepreneurship” used as a buzzword in today’s startup scene, goes back to the French 16<sup>th</sup>-century. “entreprendre” originally comes from war vocabulary and referred to the organizers and hosts of research and military expeditions. The core of an activity, then and now, contains the combination of strategy, organization, and risk (Aulinger, 2003; Boutiller & Uzunidis, 2013). Even if today’s entrepreneurship or entrepreneurial behavior has an economic meaning, it cannot be generalized since it is very individual. In the context of high-growth startup



firms, entrepreneurship requires action (McMullen & Shepherd, 2006; Wood, Bakker, & Fisher, 2021) of individuals (entrepreneurs) to create economic value (Glavas et al., 2023). Regardless of the manifestation, entrepreneurship can range from new venture creation (Bhave, 1994), new value creation (Bruyat & Julien, 2001), to new innovation (Schumpeter, Backhaus, & Backhaus, 2003) and new organization creation (Gartner, 1988).

## **2.2 Incubator**

The previous chapter explained how a startup is defined and what challenges it faces. Over time, it turned out that incubators and accelerators can be a solution for that, creating a nurturing environment for startups. This chapter therefore examines the different types of incubators, how their support may look like, as well as the differences to an accelerator. The differentiation shown serves as first checklist for the clustering of the instances to be analyzed and classified in this thesis.

### **2.2.1 Defining an Incubator and its Distinction from an Accelerator**

The existence of an incubator is not a world first. It is claimed that a business incubator already existed around the 1960s in New York (Lewis, Harper-Anderson, & Molnar, 2011). Besides the initial support of physical space and one-on-one advice, the today's purpose of these organizations is to support young ventures (startups) by facilitating networks within an entrepreneurial ecosystem. (Busch & Barkema, 2020). In the longer run, such programs should strengthen the success of a startup, boost communities of innovation, and inspire regional and national economic development (Fehder & Hochberg, 2014; Mian, Lamine, & Fayolle, 2016; Wright & Drori, 2018). A distinction can be made between four archetypes of incubators (Barbero, Casillas, Ramos, & Guitar, 2012): economic development (supported by policy initiatives), university business, research (tied to research institutions), and private (either corporate or independent). The type of support provided to young companies can hereby range from getting access to critical resources such as capital, mentoring programs, business education, professional services, and physical infrastructure (Hallen, Bingham, & Cohen, 2020; Pauwels, Clarysse, Wright, & Van Hove, 2016), to name just a few. These venture programs therefore act as a buffering and bridge-building mechanism to prevent startups from environmental variability and uncertainty.

When talking about an incubator, one often comes across the word accelerator, which is sometimes even used as a synonym. It is important to note that these terms

represent a different type of startup support by following diverse approaches. Accordingly, there are differences, for example, in the timing and duration of the support, as well as the business model behind it. The table below illustrates these differences in more detail.

	<b>Incubator</b>	<b>Accelerator</b>
Duration	1-5 years	3-6 months
Cohorts	No	Yes
Business model	Rent or fees; non-profit	Equity Investment / for profit
Selection	Nonselective / noncompetitive	Selective / competitive
Venture stage	Early or later	Early
Education	Ad hoc; human resources or legal support	Seminars, Workshops (cohort based)
Mentorship	Common, Minimal; Tactical	Intense; by self and others
Support structure	Open	Highly structured, planned
Office space	On-site	Usually on-site
Lab space	Common	Rare

Table 1: The Difference between Incubators and Accelerators  
 Source: Based on Hathaway (2016) & Woolley and MacGregor (2021)

## 2.3 Startup Ecosystem

After examining startups and institutions that support them, the next chapter embarks on an even higher flight level. Since the beginning of entrepreneurship, there have been regions or cities where founding an innovative company is supposedly easier. To name an example, the most well-known ecosystem: “Silicon Valley” (Gauthier, Penzel, Kuester, Boydell, & Ortmans, 2023). How such an ecosystem is defined, what benefits for startups occur, and who the key players are will be considered in the following.

### 2.3.1 Defining a Startup Ecosystem

The today's used buzzwords: “Startup Ecosystem” or “Entrepreneurial Ecosystem” are not novel, their roots can be traced back over a century to the field of research. Alfred Marshall was already doing analysis in this area in the 1920's by examining the influencing factors of enterprises in various territories, the so-called industrial districts (Marshall, 2009). Based on that, many different theories, and approaches to how an economy runs have been developed. Although there are various approaches, their synergies can be distilled into a fundamental idea: Influencing factors outside a venture but within a specific region do have a positive impact on the competitiveness of a company on the market. A majority of these influencing factors are embedded in a startup ecosystem, encouraging entrepreneurs and other actors to start, fund and assist these high-risk ventures (Spigel, 2017). The great advantage of this concept is that territorial models of innovation and entrepreneurship are synthesized, thus, new types of research questions are created.

Widely used in the fields of academic, policy and popular business literature, a Startup Ecosystems unite cultural outlooks, social networks, investment capital, universities, and economic policies to create a nurturing environment for innovation-based ventures (Spigel, 2017). Fundamentally, there are two ways when conceptualizing an entrepreneurial ecosystem in the areas of academic research, policy, and practice. On the one hand, the ontological view that focuses on the process of how an ecosystem emerges in a specific community (Roundy, Bradshaw, & Brockman, 2018). On the other hand, the epistemological view that focuses on the emergence in an economic system. More precisely, it is about the creation of new values and how they are implemented by certain actors and factors (Arthur, 2015). The today's state of the art and probably most well-known business literature from Feld (2020) defines four components for a Startup Ecosystem in order to be successful:

- 1) Entrepreneurs must be the leaders,
- 2) exuding a profound long-term commitment to an ecosystem.
- 3) It represents a “everyone is welcome mentality” by
- 4) offering regular activities that involve the entire community stack.

The bandwidth of value provided by such an ecosystem can hereby vary from the access to skilled employees, mentors, investment capital, provision of facility, to an entrepreneurship encouraging atmosphere. The overarching core in such communities is the communication and dissemination of concrete ideas, of how “good” entrepreneurship works. The hereby influencing factors of a company and likewise the players of such an entrepreneurial ecosystem are described in more detail below (Becker & Eendenich, 2022).

### **2.3.2 The Attributes and Key Players of a Startup Ecosystem**

As already mentioned, a Startup Ecosystem represents a union of social, political, economic, and cultural elements to build a sustainable community and foster its health. These elements can be clustered into three overarching categories: cultural, social, and material types of attributes, based on the support provided to entrepreneurs and their ventures (Spigel, 2017). Within these attributes several key players are assigned to different tasks and roles and therefore distinguished between Leaders, feeders and instigators of a Startup Ecosystem (Feld, 2020).

#### **Cultural Attributes:**

The openness towards the promotion of entrepreneurship based on confidence in a region, is seen as cultural attributes. By internalizing and spreading entrepreneurial practices, norms, and entrepreneurial success stories, different economic and entrepreneurial sectors arise. One of the well-known examples is Silicon Valley.

The entrepreneurs themselves, play a key role in that construct. Defined as leaders who advance a startup ecosystem, they put a community’s health ahead of their self-interests. This is called the “Give-First-Philosophy”. It is about giving input, not knowing when or if this “investment” will pay off in the future. This can range from encouraging and supporting new things, people, and ideas. The community is therefore constantly evolving by the new input given.

### **Social Attributes:**

Social attributes compose the rare resources required in an entrepreneurial ecosystem. Within such an ecosystem, four main social attributes exist: 1) the network itself, 2) investment capital, 3) mentors and dealmakers, 4) worker talents. To add value for entrepreneurs, the awareness and cooperation between these entities must already be present. The investors in this case, represent the financial block in a startup ecosystem. Based on their role and motivation why an investment is taken, a distinction can be made between Angels and Venture Capitalists (VC's). VC's are striving for companies with a high probability of success, generating economic returns for themselves (Kim & Lee, 2022). Angels may have the same intention, rather on a deal-by-deal basis on an eye level. Possible arrogance and a distorted perception of who is doing the actual hard work (the entrepreneurs), may have a negative impact on the business relationship and further on the whole ecosystem.

Mentors on the other hand are former serial entrepreneurs or investors, who provide their time, energy and wisdom out of conviction. They are to be distinguished from advisors, as they are not within an economic relationship with the companies supported. Mentors are therefore not pursuing a profitable outcome in the long run (Feld, 2020).

### **Material Attributes:**

The last attribute represents a concrete presence in a specific region, being either physical or intangible support. In total there are four material attributes that exist: universities, support services and facilities, policy and governance, and open markets. Some of them are also represented in the theory of Feld (2020) startup communities. The government for example is named to be a feeder. Representing an organization that is involved in a startup community but not leading it. The government is responsible for the legal framework in which companies are founded and operate in. Universities on the other hand are valuable for a startup ecosystem but not primarily necessary. Categorized as a feeder, a university, in the best case, can support with three superior clustered resources: People (students and professors), facility (research labs and technology transfer offices), and education (entrepreneurship programs). Students are the most important resource due to the potential to become entrepreneurs themselves or to work in a startup. On both counts, they implement new ideas and a fresh mindset into a community.

Besides the mentors allocated in the social attributes, also service providers do invest their time and energy at an early stage. However, in their case the monetary aspect is primary uninteresting. It is assumed that the investment will get rewarded in long-term business relations. In some cases, they may even make equity investment in early funding rounds, leading to significant returns that surpass their initial fees. The offered support can hereby rank from physical infrastructure, legal support, HR (Human Research), as well as marketing consulting.

Finally, large Companies can play a crucial role within a startup community. The most impactful contributions are: (1) offering space to convene and access resources, (2) create programs that encourage startups to build companies that enhance the large company's ecosystem, and (3) be customer of local startups (Feld, 2020; Spigel, 2017).

## **2.4 The Triple-Helix Model**

The following section delves into the aspects of the Triple Helix Model, which serves as a foundational basis for the subsequent analysis of the European incubators and their positioning within it. Initially, the model's field of applications, its genesis, and evolutionary stages will be defined and elucidated. Subsequently, a more detailed examination of the individual subsystems will be ensured, as well as the three typologies of interaction between them outlined.

### **2.4.1 Definition of the Triple Helix Model**

The Triple Helix Model refers to the frameworks used in innovation studies to analyze knowledge-based economies and their contemporary societies. Originally intended as a framework for researchers it is nowadays also used for developing innovation policies. Compared to existing linear models of innovation, it aims to examine on the correlation between academy (i.e. education system), industry (i.e. economic system), and government (i.e. political system), with respect to entrepreneurship, innovation, and economic growth within innovation systems (Cai & Lattu, 2021). It was originally developed by Etzkowitz and Leydesdorff (2000). Within the model, various insights from disciplines such as evolutionary economics, the sociology of science and technology, the sociology of higher education, as well as policy analysis are combined (Zhou, 2014). To get a brief insight into the preceding evolution stages of knowledge-creating models, as well as those based on the Triple Helix Model, consider Figure 2

below. Each of the models presented does have a specific contribution to the generation, diffusion, and use of knowledge.

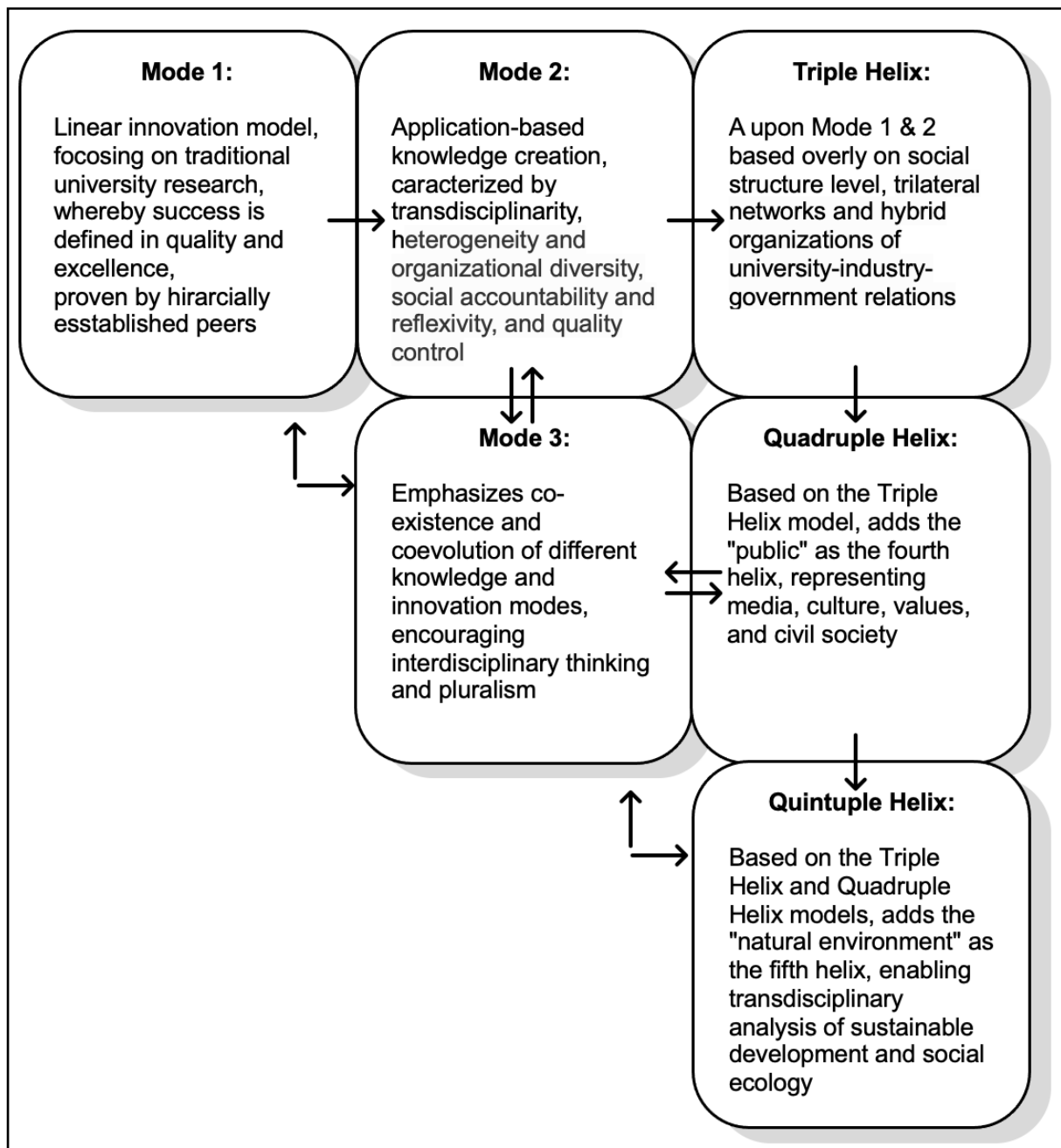


Figure 2: The Evolution of the Model of Knowledge Creation
   
 Source: Based on Carayannis, Barth, and Campbell (2012)

The Triple Helix Model follows five major aspects of the rationale, creating the perfect conditions to foster innovation. (1) The theoretical core, represented by a triadic interaction as an Occam’s razor principle (Walsh, 1979). Its idea is to question the necessity of bringing complexity or hypothetical constructs to a given explanation. The focus should always be on simplicity. (2) The core mechanism in which an instance

takes the role of another. Herby the movement towards non-traditional roles represents a high potential for innovation within innovation. (3) The evolutionary mechanism, as a fundamental basis of the Triple Helix Model. Whereby the development of the model must be prestructured/coordinated to synthesize evolution in the vertical and circulation in the horizontal axis (Meyer & Leydesdorff, 2006).

(4) The functional mechanism that allows top-down and bottom-up initiatives. Accordingly, the government sets certain policies for innovation (top-down), counter-facing an active civil society encouraging initiatives (bottom-up). (5) The necessity of leadership and capabilities within the Triple Helix Model. Wherein a distinction is made between two conditions of interaction. The sufficient condition of convening authority and necessary condition of innovation capacity (Cai & Etzkowitz, 2020).

### 2.4.2 The Subsystems of the Triple Helix Model

As already mentioned, does the Triple Helix Model deal with three subsystems to foster innovation: university - industry - government (see Figure 3). A distinction can be made between three types of interaction of these instances within the Triple Helix Model (Cai & Etzkowitz, 2020). (1) In the “Statist Model”, the government provides the recourses for new initiatives, leading the academy and industry. (2) In the “Laissez-faire Model”, the three instances are independent of each other, interacting beyond strong boundaries. (3) The “Balanced Model”, whereby firm boundaries are more flexible, and instances take the role of each other. Since the global tendency is towards the Balanced Model, in which the overlapping of spheres results in an optimal breeding ground for innovation, this model is referred to a basis for this thesis. The related subsystems of the Balanced Model and their correlations will be explained below.

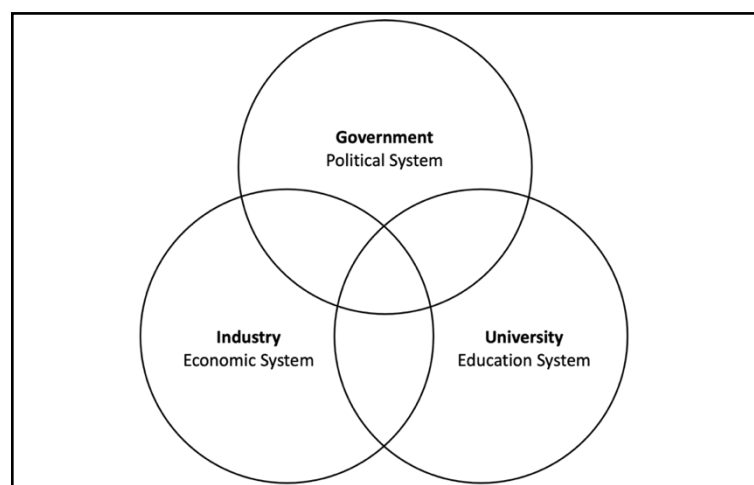


Figure 3: The Triple Helix - Balanced Model  
Source: Based on (Cai & Etzkowitz, 2020)



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### **The Political System**

The first subsystem is the government, which somehow guides the direction with the ideas, plans and laws made by politicians. Representing the legal framework, it guarantees a constant interaction and exchange of the involved stakeholders. It is further responsible for correcting market failures, and the provision of venture capital for high-risk businesses like startups (Cai & Etzkowitz, 2020; Carayannis et al., 2012).

### **The Education System**

The second subsystem references to academia, universities, higher education systems, and schools. In this helix, humans are the capital and the source of new knowledge and technology. This could for example be teachers, students or academic entrepreneurs, who are educated based on diffusion and research of knowledge. Taking the role of the others, the educational system can for example provide technology transfer offices, incubators, science parks, and entrepreneurship education to the triple helix, in order to capitalize knowledge, patents and startup companies.

### **The Economic System**

The third subsystem deals with the industry and the companies, services and banks contained within. It represents the centre of goods and services produced. Accordingly, the tools needed to form sustainable economy are considered (e.g., machine, technology, products, and money). In order to interact with universities and government, the industry could for example generate knowledge by doing research and diffuse knowledge through the provision of high-level training.

### **3. Methodology**

The main goal of this study was to obtain a large number of incubators and accelerators operating in Europe in order to perform a qualitative data analysis to determine their positioning within the Triple Helix Model and the resulting support offered to startups. The following describes the methodological approach to answer this question. The chapter will give an overview about the research design, the way of data collection, the coding scheme, as well as the data analysis procedure.

#### **3.1 Research Design**

The research design of this study was anchored in a qualitative methodology, aiming to explore and interpret the dynamics of collaborations between top European incubators and the Triple Helix Model subsystems. And thus, figuring out what the positioning of these incubators is, and what the associated support offers for startups are. This approach was chosen to allow a rich, contextualized understanding, emphasizing words rather than numbers. The qualitative nature of the research design facilitated an in-depth examination of the content available on the "About Us" pages of the incubators' websites. Since there is a large amount of literature in the areas of a Startup Ecosystem and the Triple Helix Model, a deductive approach was pursued, using the theory as a starting point. This research design ensured that the data analysis was iterative and reflexive, allowing for the emergence of patterns and themes that were grounded in the data and further interpreted (Bell, Bryman, & Harley, 2022).

#### **3.2 Sampling Strategy**

The initial raw data set was collected from Crunch Base, a commercial database provider and news portal for corporate and business information with a focus on technology companies and investors. The real-time provision of data is guaranteed by the unique community of contributors, partners, and in-house data experts of Crunch Base (crunchbase, 2024a). The real-time accessible data on Crunch Base was a decisive argument, containing a large pool of relevant company information such as field of activity, location, number of investments or website information. Furthermore, this platform enjoys general popularity in the fields of entrepreneurial research (Ferrati & Muffatto, 2020). Accordingly, no primary data was generated, but secondary data was used for the qualitative data analysis of this thesis.

The first search query performed on Crunch Base was on the term “Investors” (see Table 2). The resulting list ranked 271.329 institutions including incubators, accelerators, Venture Capital, Micro VC, and Entrepreneurship Programs. Further information’s about the respective institution were given on their investment activities, fund raising history, portfolio companies, and recent news (crunchbase, 2024b). In order to obtain an unbiased sample that fits the research question a first exclusion criteria was applied. By filtering after institutions type “Incubator” a data set of 2.375 results remained.

For geographical comparability, a second filter was applied. Since the European Union represents common principles and values and therefore similar structures prevail (European Union, 2024), the initial search query was further filtered according to the institutions location within European borders. The initial list of 2.375 institutions was therefore reduced to 668.

The third and last set of additional exclusion criteria concerned the institutions investment history. By taking at least one investment made into account, credibility of the institution’s performance should be guaranteed. Ultimately, this search strategy resulted in list of 372 incubators, ranked according to the number of investments made, and a field of operation within European borders.

Step	Filtering Criteria	Remaining Hits
1	Initial Search Query: „Investors“ (Including incubators, accelerators, Venture Capital, Micro VC, and Entrepreneurship Programs)	271.329
2	First Filter: Institutions Kind - „Incubator“	2.375
3	Second Filter: Geographical Selection - „Within Europe“	668
4	Third Filter: Investment History - „At least one Investment“	372

Table 2: Filtering Criteria and the remaining Hits

### 3.3 Conversion of the Data Sets

The next step was about converting the listed institutions and their information into an analyzable format. Since the methodological approach of this thesis was a qualitative one, the content of the institutions websites were used. More specifically, the “About us” page, which represents a company’s self-description, its field of activity and the offered services. This page was not a coincidence but chosen from the background to establish a comparable framework between the individual institutions, since nowadays

every company has this site or at least a related one. To obtain a meaningful result of this analysis, these pages of self-disclosure of the one hundred top-ranked institutions in the Crunch Base list, which also fell under the stigma after Hathaway (2016) & Woolley and MacGregor (2021) (see Table 1), were used. To ensure the process of further analysis, the data set was extracted using the function “save as PDF” in the web browser and imported to ATLAS.ti. A tool that specifically facilitates data analysis for qualitative & quantitative and mixed methods research (ATLAS.ti, 2024). In the case of some institutions, the design or animation of the websites did not allow a direct PDF export. In these instances, screenshots of the about page were taken and then put together in a PDF format afterwards. Lastly, there has also been institutions whose data sets were unusable or even unavailable to crawl. Reasons for this were, for example, native website languages that could not be translated or even error messages like “404” which prevented access to the information. To achieve solid credibility of this analysis, these datasets were marked in the data set from Crunch Base and another institution was used from the ranking instead. This procedure ensured the utilization of precisely 100 datasets for the qualitative data analysis conducted.

### **3.4 Coding Scheme & Data Analysis**

The data set was initially analyzed at a meta level in ATLAS.ti. For this purpose, the three subsystems (Politic, Education, and Economy) of the Triple Helix Model served as a framework. This approach should confirm the possibility to classify the incubators in the Triple Helix Model, answering the first research question. The meta coding scheme followed hereby the under 2.4.2 stated definitions of Cai and Etzkowitz (2020) and Carayannis et al. (2012). Accordingly, the data set was examined meticulously and appropriate paragraphs for the respective subsystems were generously coded. In doing so, no precise attention was paid to the kind of connection or the way of cooperation / interaction between the institution and the respective subsystem in the first place. It was more a matter of, if something was mentioned that aligned with the criteria of a subsystem. The associated codes were stated as “Political System”, “Educational System” and “Economical System”, and served as a supergroup for the later defined second level codes. This process was initially applied to the first ten listed incubators and then repeated for all the one hundred data sets.

In the next step, the respective paragraphs were analyzed in a greater depth, digging deeper in the assumed cooperation's, and thus to answer the second research question. For this purpose, the first level codes of the data sets 1 to 10 were carefully reread and notes taken on potential second level coding. The focus here lay on finding specific key words in the self-description of the incubators. This approach made clear that, the second level codes had to be stated from the perspective of an institution toward the respective subsystem. The most common coding structure emerged as follows: The institution is <verb> <preposition> (respective subsystem) (see Figure 4). On the one hand, this coding scheme made it possible to briefly and concisely represent the type and manner of cooperation, as well as to see at a glance which subsystem is associated. The latter was particularly important because there have been second order codes that also applied in other subsystems. By labelling them in brackets, a quicker assignment was possible in ATLAS.ti software.

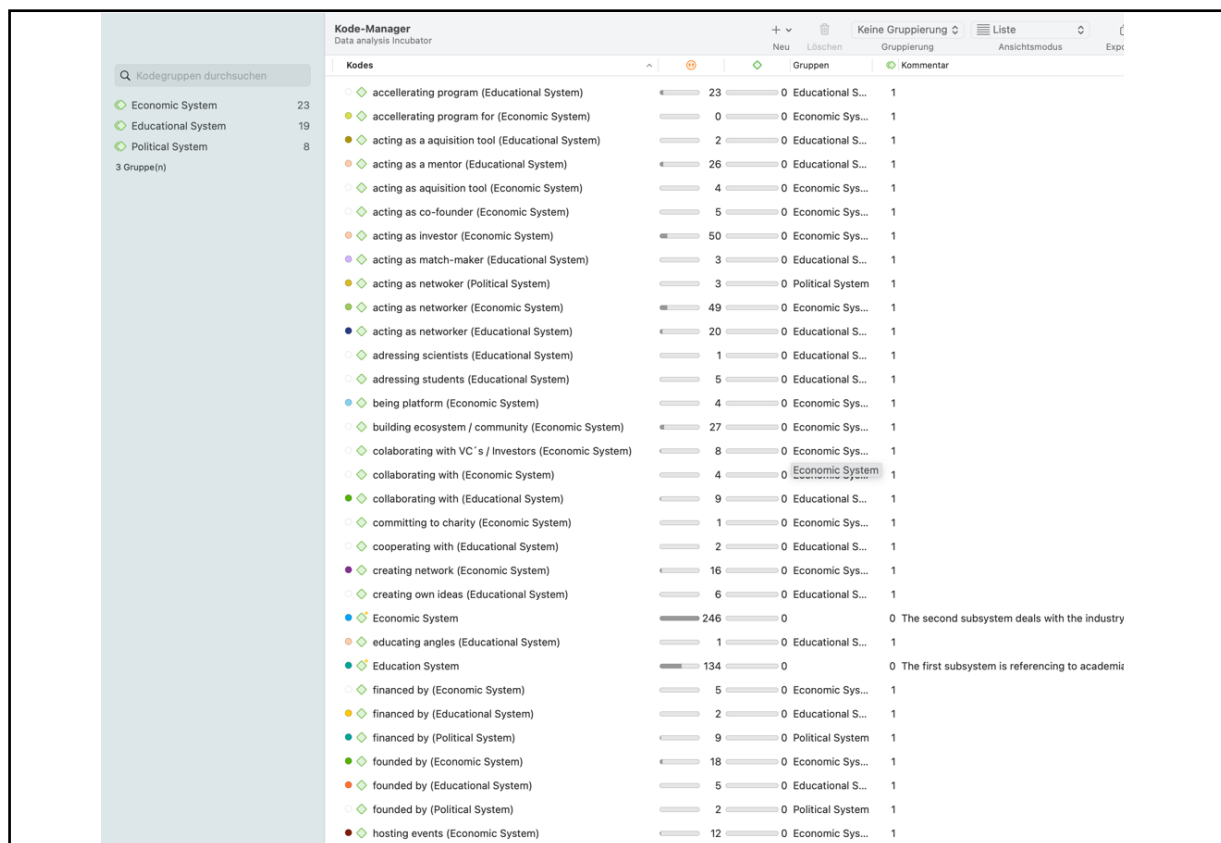


Figure 4: Overview of First and Second-Level Codes

Initially, codes were generated from the analysis of the first ten data sets following this scheme. These second level codes served as a foundation for the subsequent institutions. However, the dynamic nature of data often led to the identification of new

insights, that were not initially considered. In response, an iterative loop was initiated, wherein new codes were developed to accommodate the novel findings. Remarkably, these newly identified codes were not only applied to the current data sets but also retroactively incorporated into the analysis of previous data sets. This iterative feedback loop ensured that the coding process remained adaptable and responsive to emerging insights.

To facilitate subsequent visual analysis of the findings, the penultimate procedural step entailed the conversion of the three metagroups, along with their respective second-level codes, into a coherent network structure within the ATLAS.ti software framework. Corresponding with the second-level codes, the associated quotations were presented. However, it is imperative to note that these quotations did not assume the role of an additional tier in the coding hierarchy. Rather, their purpose lay in providing more in-depth information in individual cases. During the coding process, it could be noticed that synergies appeared between the codes. Therefore, in addition to the allocation of codes to the subsystems, it was also possible to cluster them among each other. The subsequent endeavouring to aggregate them into clusters, was predicated on content overlaps or shared objectives whenever feasible (see Figure 5).

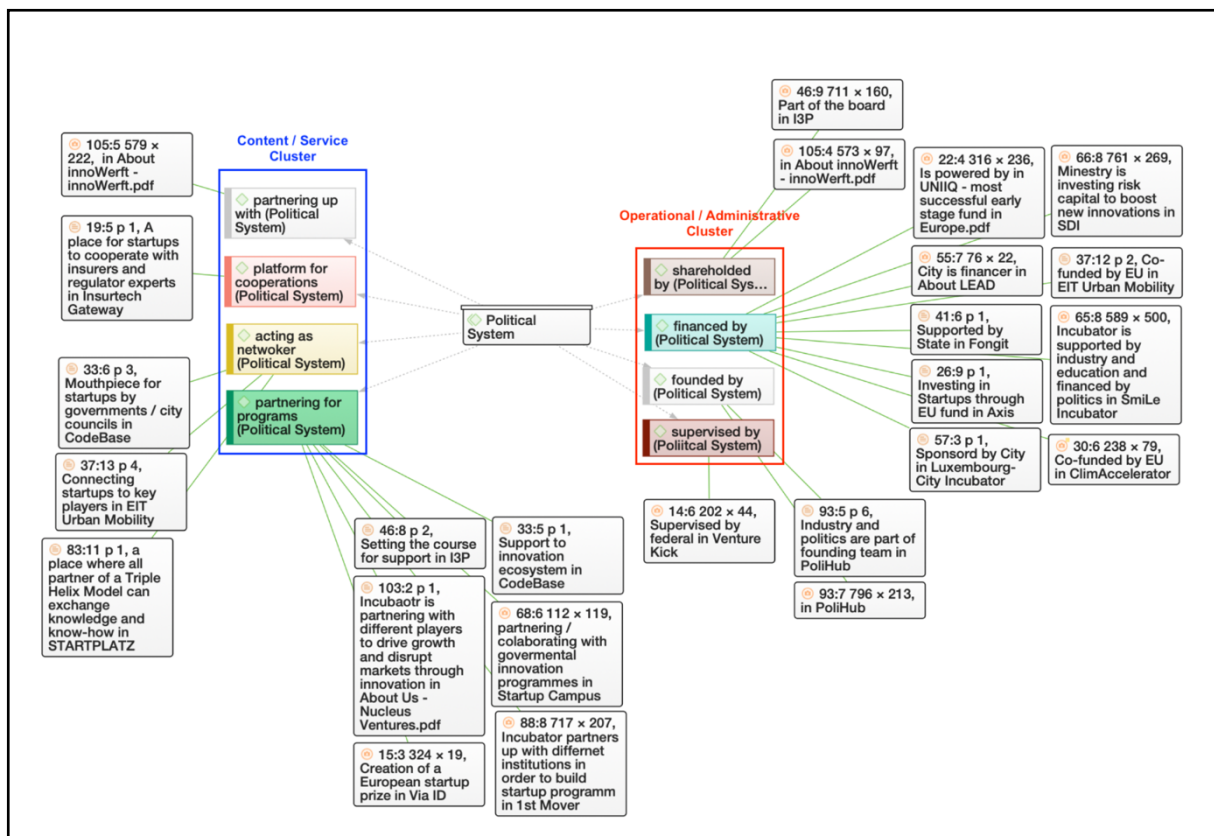


Figure 5: Network Structure of the Political System

### 3.5 Case Study brigk

In order to create a comparable framework, aiming to answer the last research question, the methodological steps described above were also applied to the case study of the local incubator brigk. In addition to the first assignment of the paragraphs to the subsystem, the existing second order codes were then used in the second step, making the corresponding collaboration between the subsystem and the local incubator visible. The aim of this process was also to transfer brigk into a visually coherent network in order to subsequently enable a comparison between the positioning of the one hundred analyzed institutions and brigk. And ultimately to define recommendations for action. However, it is self-explanatory, that a single data set cannot nearly provide as much as information for a comparison as one hundred data sets do. For this reason, brigk's data set was based not only on the "About us" page, but on the content of almost the entire website. In addition to this information, the second-order codes were also fed with internal knowledge, stated in the quotations. In contrast to the incubators analysed, these quotations were more important in the case of brigk in order to compensate the limited amount with depth of information.

### 3.6 Limitation of the Research Methodology

Besides the many insights gained from this research methodology, it also comes with certain limitations. When collecting the data set, secondary data was used, which had already been filtered before the data set was extracted and further analyzed. Although these filters were set by hand, there is no information about the filtering criteria defined by Crunch Base. If one wants to be sure that by definition only incubators and no other institutions are listed, the recommendation would be to extract an unfiltered data set, filtering it with self-defined criteria afterwards. Another limitation lies in the depth of information revealed through the conducted qualitative analysis. By aiming for an overarching view of the positioning of the top one hundred incubators in the Triple Helix Model, the depth of information gained was somehow limited. Thus, the "About us" pages revealed a lot of valuable information about the collaboration between the institution and the subsystems, but no exact details about specific procedures, for example initiating or performing an accelerator program. For a more in-depth action analysis, it therefore makes sense to extend the analysis to other website pages, introduce a third layer of codes or perhaps even have a direct exchange with some incubators.

## 4. Results

Since the approach, analyzing the one hundred data sets was presented in the previous methodology section of this thesis, the following chapter will focus on the insights obtained. This confirms the upstream question of whether the Triple Helix Model can be used to classify the top European incubators and further provides the relevant insights to the cooperation's and their structures. These findings are described without interpretation and systematically enumerated according to the three subsystems of the Triple Helix Model in the following.

### 4.1 Political System

The first subsystem examined, the "Political Subsystem," is also the one with the fewest second-level codes (8). The conducted analysis reveals two discernible clusters characterizing the interaction or collaboration between incubators and political entities (see Figure 5). The number of respective second-level codes (8) and the findings are explained below.

#### 4.1.1 Operational and Administrative Cluster

On the one hand does the analysis show, that the one hundred analyzed institutions interact on an operational and administrative level with the first subsystem. This overarching cluster summarizes four second-order codes, containing various dimensions of political involvement. First, in certain instances of the examined data sets, political involvement extends to the initiation and founding of the incubator itself (frequency 2). Indeed, this phenomenon is less about collaborating and more about establishing foundational elements, where political involvement assumes a crucial role for the incubator. It is imperative to highlight as well, that the establishment of incubators is not solely within the purview of governmental agencies. Instead, the analysis shows that it involves collaboration with other subsystems of the Triple Helix Model, contributing to the foundational framework for incubators (e.g. data set 93). Further, the conducted analysis reveal that political entities also assume a participatory role as stakeholders (frequency 2), entailing advisory responsibilities (frequency 1) for the incubator actions (e.g. data sets 14, 46, 105). Lastly the examination reveals, support of financial resources by the political entities (frequency 9). These provided funds are directed either towards initiating substantive support for startups by the



incubator (e.g. data set 66) or to directly invest in startups through the incubator (e.g. data set 26).

#### 4.1.2 Content and Service Cluster

On the other hand, the analysis also reveals the emergence of a cohesive cohort in the context of content and service-oriented collaboration with politics. In sum, four second-level codes can be assigned to this cluster. In the first place, it has been discerned that a collaborative endeavour is being pursued with political entities concerning the establishment of support programs (frequency 6). Across the institutions scrutinized, this spectrum extends from the initiation of standard accelerator programs (e.g. data set 68, 88) to the establishment of a pan-European award ceremony (data set 15). The overarching goals named by the institutions in this context are to drive growth and to disrupt markets through innovation (dataset 103), to support innovation ecosystems (data set 33), and to establish guidelines for startup support (data set 45). Further shows the qualitative analysis that incubators act as a platform for startups and political institutions (frequency 1), and thus also have an effect as a networker between them (frequency 3). Through this, the examined institutions enable innovative ventures to connect and collaborate with relevant service providers such as insurance and regulatory experts in a simple and uncomplicated way (data set 19). Moreover, the incubators represent a role as mouthpiece for startups by communicating with governments and city councils (data set 33).

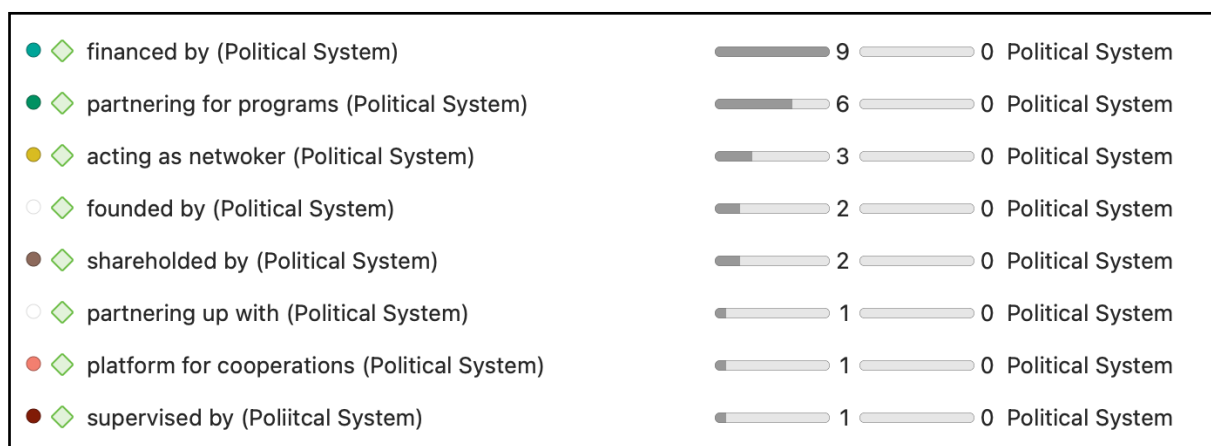


Figure 6: Frequency Second-Level Codes Political System

## 4.2 Educational System

Secondly, the cooperation between the incubators and the “Educational System” of the Tripel Helix Model is analyzed. This qualitative approach results in four clusters within this helix, containing nineteen second-order codes (see Figure 7&8). The findings are explained in the following.

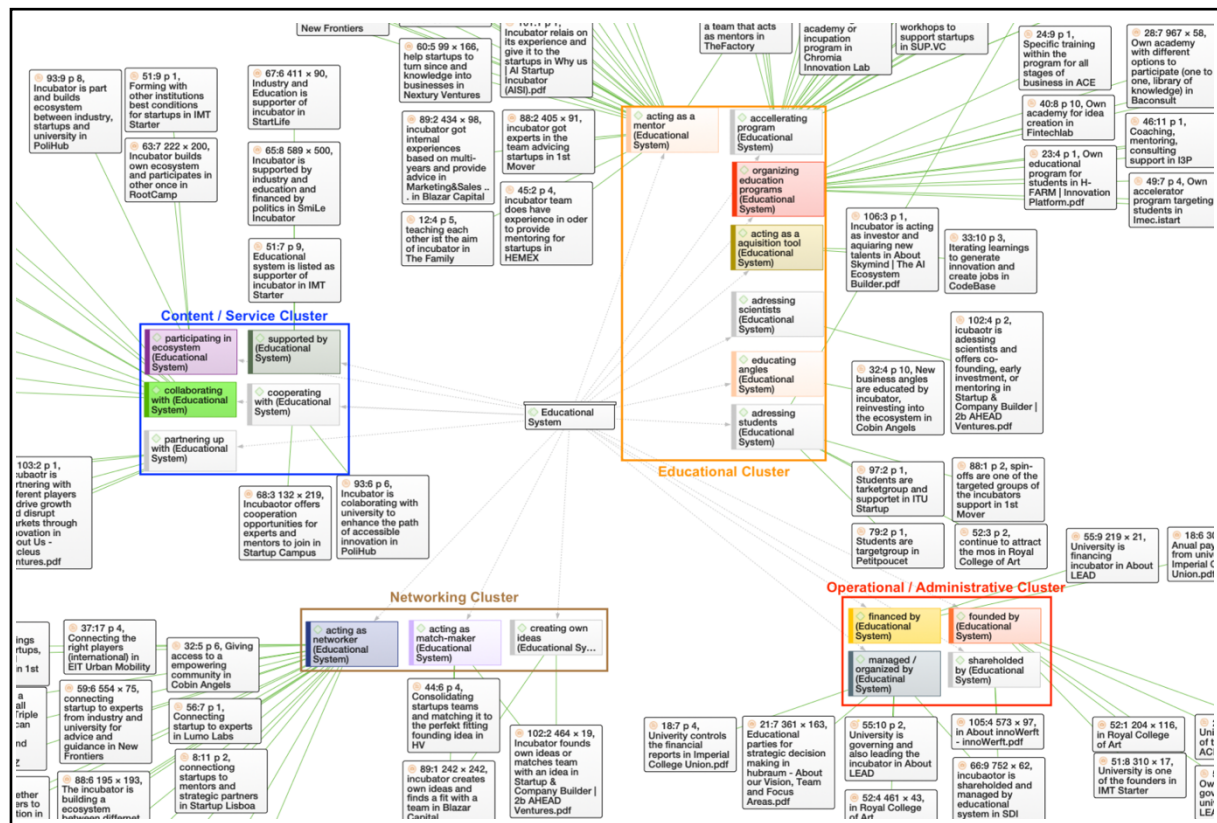


Figure 7: Network Structure of the Educational System

### 4.2.1 Operational and Administrative Cluster

Similar to the before examined subsystem, also the Educational Subsystem can be delineated to a cluster summarizing the cooperation on an operational and administrative level. The cluster contains four dedicated second level codes.

The data examination shows that the Educational Helix acts as a pioneer, respectively being part of the founding initiative (frequency 2) and shareholder of the incubator (frequency 5). As previously shown with the Political System, initiation of an incubator occurs not only through individual actions by the Educational System (data set 52) but also through collaboration with other institutions, e.g, from the industry sector (data set 22). In addition to establishing foundational frameworks, another imperative task discovered involves the ongoing monitoring of the incubator (frequency 5). In the data sets analyzed, this includes tasks such as controlling liquidity reserves (data set 18)

and formulating strategic decisions (data set 21) by the Educational System. Ultimately, beyond financial monitoring, the allocation of financial resources to the incubator also constitutes a significant realization (data sets 18 & 55). Similar to the Political Subsystem, it is noteworthy to highlight that this cluster primarily concerns the Educational System's role in establishing the foundational framework for the incubator's operations, rather than fostering collaboration.

#### **4.2.2 Educational Cluster**

Unlike the first cluster, the second one operates on an educational level. The cluster contains seven dedicated second level codes. Among the data sets examined, the incubators do not interact or cooperate with educational institutions respectively the Educational System, rather the incubators take on the role of the Educational System. Accordingly, the examined incubator itself creates a wide range of opportunities to educate human capital. Commencing with rudimentary accelerator programs (frequency 23) for startups in pre-seed up to scale phase (data sets 8 & 85) or mentorship (frequency 26) offered by internal experts and former entrepreneurs enabling science and technology transfer (data sets 28 & 60). Further do the analyzed incubators progress education (frequency 12) entailing the establishment of their own institutions such as schools or campuses (data set 13 & 23). The target groups addressed by the examined institutions range from already established startups (data set 8) to the education of business angels (data set 23) and scientists or students (data sets 100 / 97). What is notable within this cluster is the extensive engagement of the analyzed incubators in providing own educational offers, ranging from basic programs to the establishment of proprietary educational institutions.

#### **4.2.3 Content and Service Cluster**

As the third cluster, analogous to the Political Subsystem, a clustering based on content/service can be conducted. Unlike the previous one, the analysis shows, that the focus in this cluster is not on taking on the role of the Educational Subsystem, rather cooperating with it on a content / service level. Respectively, five second level codes can be assigned. First, it can be seen that educational institutions are listed as supporters (frequency 3) or partners (frequency 5) on the incubator websites. For instance, this partnership includes the conceptualization and execution of accelerator programs (data sets 59 & 97). Thirdly, under the analyzed institutions collaboration's / cooperation's (frequency 9 / 2) exist, executing tests (dataset 37) to e.g., validate new products and technology developments (dataset 36). A further cognition is represented

in the fifth second-level code. Some of the examined incubators participate or even build their own ecosystem (frequency 3) with universities but also with other subsystems of the Triple Helix Model (data set 93). Thus, the goal is to inspire and enable each (data set 37) other in order to form best conditions (data set 51), driving innovation on a service level.

#### **4.2.4 Networking Cluster**

The last cluster formed within the Educational Subsystem is the networking cluster, containing three second-level codes. As implied by its title, this cluster summarizes the incubator facilitation of connecting appropriate individuals and institutions with each other. The resulting codes “acting as matchmaker” (frequency 2) and “creating ideas” (frequency 1) however, describe less the collaboration between the analyzed incubators and the subsystem. In these cases, the analysis shows that the incubator once again takes on the role of the associated subsystem by creating the basis for a downstream education. In addition to specifically development of startup ideas (data set 44) by the incubator itself, these venture builders also take on the collation for a supposedly perfect team matching to these ideas (data set 102). In the latter case, universities are brought in as partners to acquire startups teams (data set 59). However, the actual cooperation with the Educational Subsystem is finally demonstrated through the third second-level code, “acting as networker” (frequency 20). It reveals that the examined incubators act as a platform, facilitating the opportunity to connect startups with experts of the Educational System. These experts rank from experienced entrepreneurs (data set 51) to researchers (data set 34), who subsequently educate and support as mentor or advisor network. In addition to interpersonal connections, the analysis also indicates institutional-level networking, fostering the establishment of a community or ecosystem with different players by the incubators (data sets 83 & 88). The overarching goal of this is to promote the exchange of knowledge and to drive innovation (data sets 11 & 83).

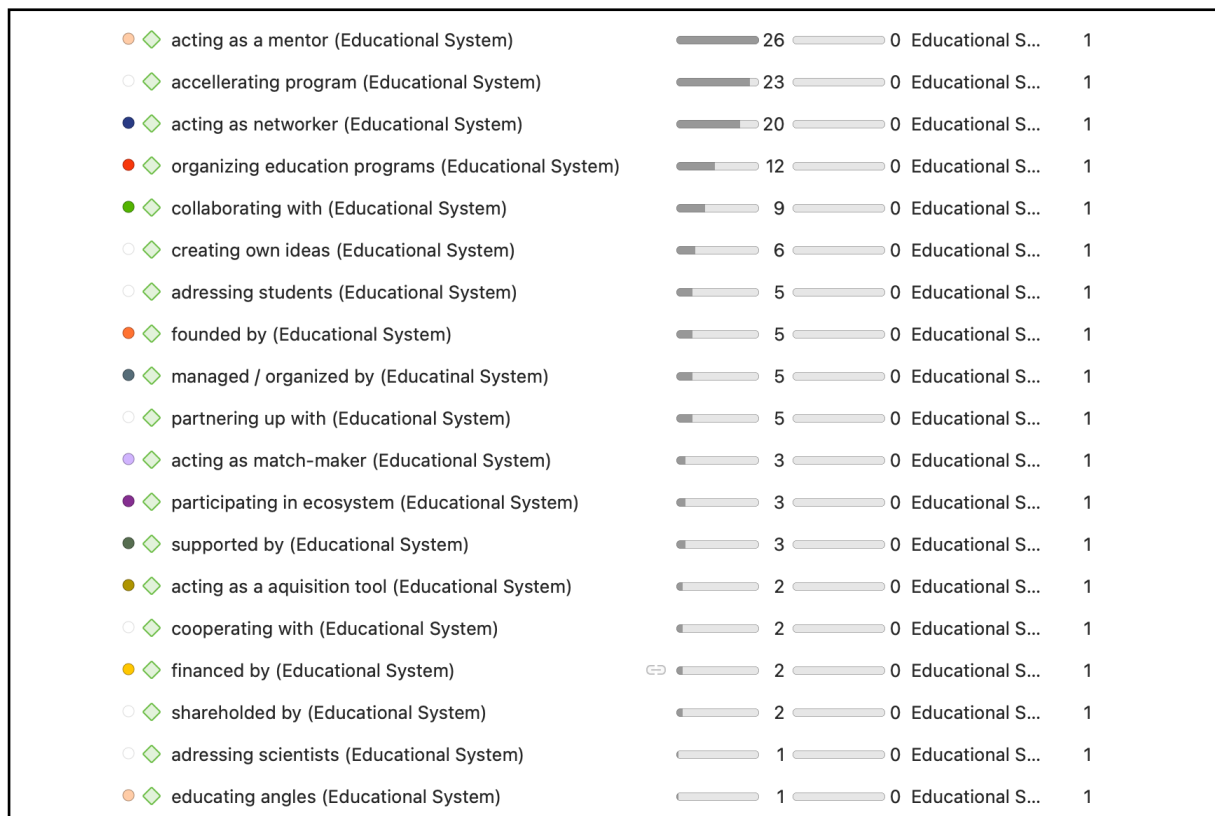


Figure 8: Frequency Second-Level Codes Educational System

### 4.3 Economic System

Thirdly and finally, the incubators relation with the Economic Subsystem is shown.

When analyzing the one hundred data sets, five superordinate clusters are formed, adapting to the once form the previous one and the norms of the respective subsystem.

By containing a total of twenty-two second order codes, this frequency represents the incubators most interaction / cooperation with a subsystem of the Helix Model (see Figure 9). The findings are explained in more detail below.

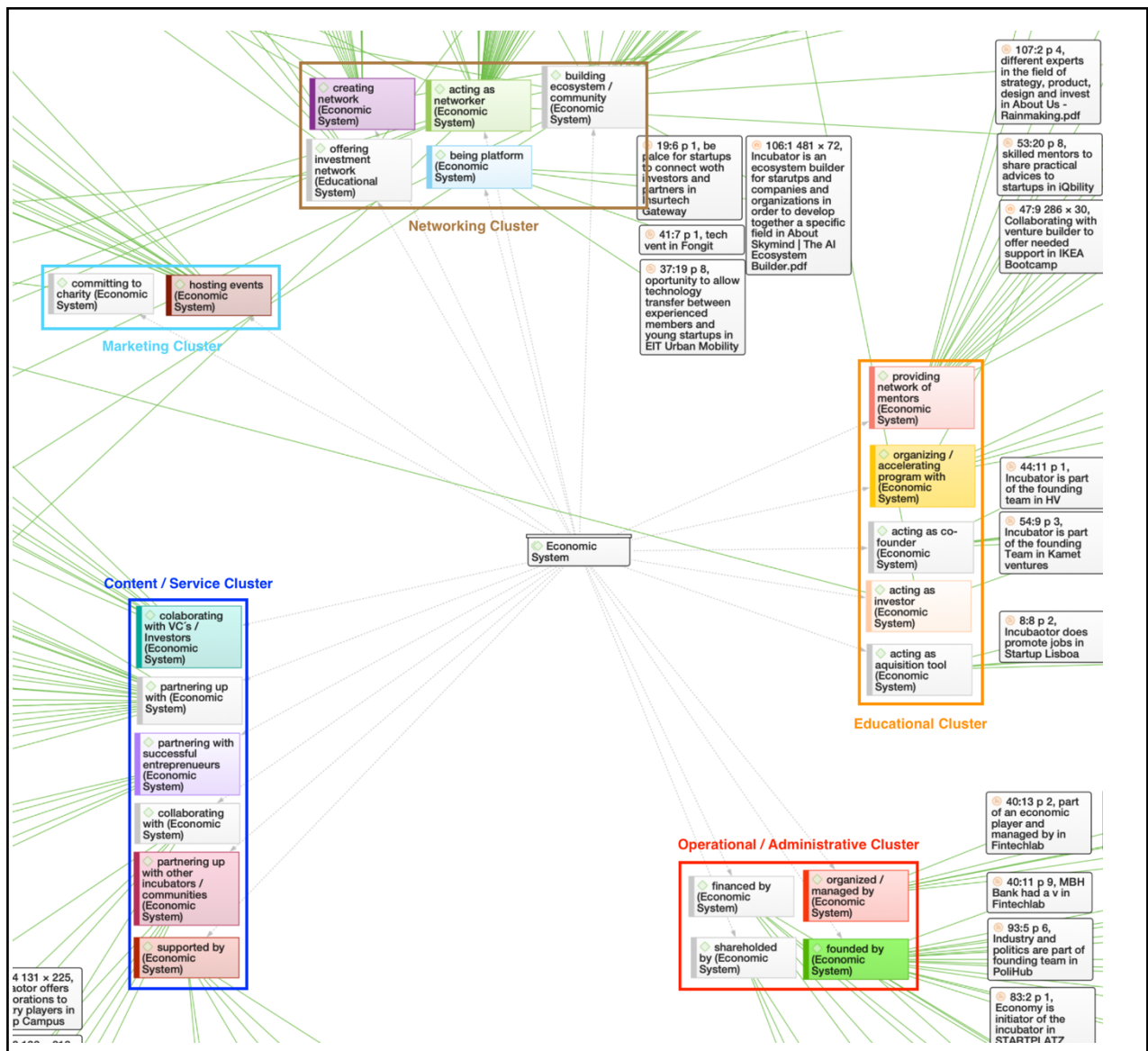


Figure 9: Network Structure of the Economic System

### 4.3.1 Operational and Administrative Cluster

Similar to the other Subsystems of the Triple Helix Model, the economic one can also be cluster to an operational and administrative interaction with the analyzed incubators. The cluster contains four second-order codes (see Figure 9).

The analysis shows that the datasets cooperate / interact less with the economy but are rather initiated by it. Accordingly, the same effect can be seen as with the previous examined Political and Educational Subsystem. Thus, incubators are financed (frequency 5) and respectively managed / organised by the industry (frequency 6). In detail does the analysis reveal, that economic experts for example, control the financial reports and advise for strategic decisions (data sets 15 & 18). Among the second order codes, however, the upstream foundation by the industry stands out in particular due to its frequency of eighteen. In addition to banks and companies (datasets 40 & 53), also serial entrepreneurs (data set 77) are mainly driving the establishment of such startup supporting institutions. Lastly, the longer-term participation of industrial parties as a shareholder of the analyzed incubators is evident (frequency 3).

### 4.3.2 Educational Cluster

The second one that can be formed congruently to the Educational System is the educational cluster. It contains five dedicated second-order codes. In the first place the analysis shows that incubators do cooperate with the industry in order to setup a network of mentors (frequency 15). Various experts with skills in different fields e.g. strategy or product design (data set 49 & 107) are collected by the incubators, mentoring startups and founders. Further does the industry support some of the analyzed institutions in the initiation and organization of an accelerator program (frequency 5). The predominant support provided assumes a strategic orientation, wherein the industry additionally adopts a mentoring function within the accelerator program (data set 21 & 33). Another finding is that incubators do act as acquisition tool for the economy (frequency 4), by scouting startups for certain challenges (data set 88) or seeking for underestimated markets and their problems (data set 102). In rare cases, the incubator even acts as a co-founder (frequency 5). In these scenarios, similar to the previous second-order code, the incubator however, tends to take on the role of the Economic Subsystem. Accordingly, the incubator represents in the fifth code the economic money, investing into startups with different development stages. Looking at the distribution of frequency in this cluster or the entire subsystem, it becomes clear that acting as investor, and respectively also as economic system, is

the most prevalent one (frequency 50). Besides the plain provision of cash, also smart money, educating founding teams through strategic advice is revealed by the analysis (data set 58 & 61).

#### **4.3.3 Content and Service Cluster**

Also, the content and service cluster can be transferred to the third helix, classifying six second-order codes (see Figure 9). The first finding within this frame, is the listing of economic entities as supporter on the incubator's websites (frequency 6). The second-order code "partnering up with" the economy (frequency 22) offers a deeper understanding to the nature of this support. For example, a platform is being set up in cooperation through which industry and start-ups can network (data set 84). Further it is evident that the elements delineated earlier in the educational cluster, such as the accelerator program or mentor network, are devised in collaboration with the industry (data sets 83 & 88). The provision of liquid funds (frequency 50) is also handled hand in hand with the Economic Subsystem and represents the most prevalent second order code. The analyzed datasets therefore either invest money from SMEs or are in close dialogue with Venture Capitalists and Angels as partners (data sets 66 & 102). Lastly, it is apparent that the analysed incubators also work together with like-minded people or institutions. Accordingly, the incubators do engage with each other or with larger ecosystems, providing the best surrounding for new innovative ventures, both national and international (data sets 51 & 83).

#### **4.3.4 Networking Cluster**

In the fourth cluster also the networking effect can be seen between the analyzed incubators and the Economic Subsystem. In total five second-order codes can be allocated. The analysis reveals that this kind of cooperation contains several points, that are fundamental for the previously described cluster. Thus, the institutions aim to create a network (frequency 16) of economic institutions, experts (data sets 34 & 37) and investors (frequency 6), forming a platform (frequency 4) for dialog and knowledge transfer. A further part and overarching aim of the analyzed datasets is to build an ecosystem / community (frequency 27) of different players, either in a certain field, national or international (data sets 11 & 93). This underscores the active involvement of the examined incubators in networking activities. Illustrative instances encompass aiding startups in locating collaboration partners and facilitating connections with investors or mentors within the industry (data set 59 & 96).



### 4.3.5 Marketing Cluster

Ultimately the fifth cluster, the marketing one is formed. The second order codes contained therein (2) represent a type of commercialisation by the incubator facilitated in cooperation with the industry. Accordingly some of the analyzed institutions organize events (frequency 12). In this scenario, collaboration with the Economic System entails the incubators scouting for startups, whereas the industry delegates experts and decision makers to these events. Formats that are staged in this case, are for example Pitch- or Match Making-Events (data set 24 & 85). Through this, startups are given the opportunity to promote themselves in front of industry players or VCs. The analysis also reveals, that in a single case, also charity campaigns are planned (data set 29). However, given the negligible frequency of this second-order code and the absence of additional information regarding collaboration with the subsystem, this code is mentioned but disregarded.

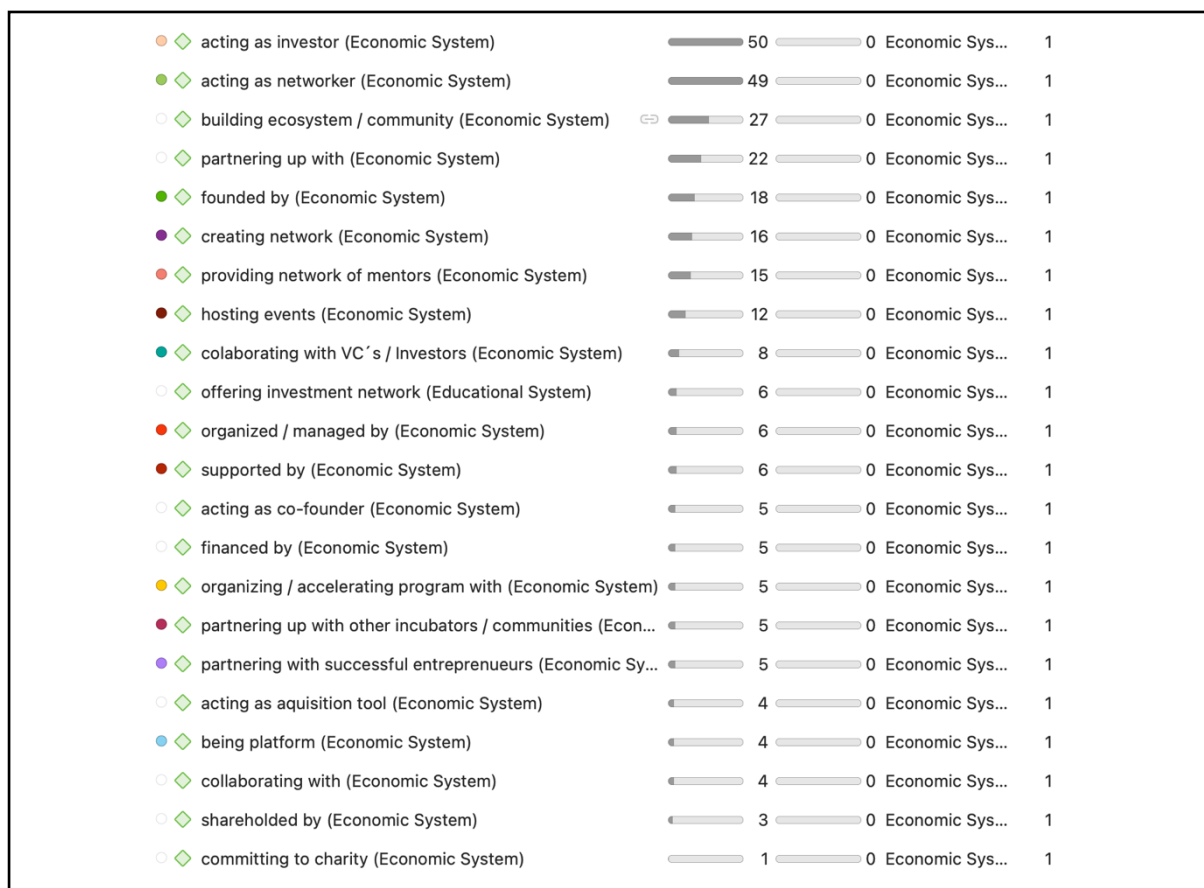


Figure 10: Frequency Second-Level Codes Economic System

## 5. Discussion

In the following chapter, the previously achieved results of the qualitative data analysis are summarized and discussed. The findings among the one hundred incubators and the three subsystems are compared with the state of current research. This is intended to highlight deviations and similarities between theory and practice, providing an interpretation of the results gained. The aim of this final part is therefore to answer the initial questions about the positioning of the top one hundred European incubators within the Triple Helix Model and the respective cooperation's with the subsystems.

### 5.1. Political Subsystem

The Political System was not only the first subsystem to be examined, but also the one showing the fewest points of interaction with the examined incubators (only eight second-order codes). However, it must be remembered, important steps are often taken at this level of action to support startups within an ecosystem (see paragraph 2.3.2 - Government). Underlining this theory, the analysis shows within the first cluster that, on an operational or administrative level, the incubators interact less with, but are rather initiated by politics. The subsystem thus initially lays the foundational framework for some of the analyzed incubators and further for a startup ecosystem, fulfilling its role as a material attribute, respectively as a feeder of an ecosystem (Feld, 2020; Spiegel, 2017). It is also shown that after initiating the incubator, further actions are taken by politics, shaping the path by supervising or shareholding some of the institutions as it is stated by Cai and Etzkowitz (2020) and Carayannis et al. (2012). The reason for this is perhaps the possibility of reacting to changing economic situations in which incubators can act as accelerators (see the 2.4.2 Political System). The associated huge operational effort probably also explains the high weighting of the second-order code "financed by" (frequency 9) within the analysis. It represents the most prevalent one, confirming that facilitating the provision of venture capital to incubators and high-risk ventures is also a task by politics. Real collaboration between subsystem and incubators only appears on a content or service level within the second cluster. Besides networking activities that probably arise due to political subsystem's intentions to ensure interaction and exchange between all players in the ecosystem (see paragraph 2.4.2 The Political System), in particular the fact that incubators collaborate with politic in order to offer startup programs (frequency 6) stands out. The reason for this could for example be the level of even international impact achieved.

By this, more credibility is given to the young innovative ventures, contributing to a nurturing environment for them in the long run (Hallen et al., 2020; Pauwels et al., 2016).

## 5.2 Educational Subsystem

The second subsystem analyzed is the Educational Subsystem, containing four clusters. By examining this subsystem, attention was paid not only to the relationship between the incubators studied and the educational institutes, but also to whether the incubator itself takes the role of the subsystem as is it defined in the second major aspect “taking the role of another” (see paragraph 2.4.1). This hypothesis is confirmed by the most frequently occurring second-level codes “acting as mentor” and “accelerating program” (see Figure 8) in which the analyzed incubators provide the transfer of knowledge by themselves. The analysis shows that due to this, there is a strong weighting in the educational cluster. The majority of the examined institutions assume the role of the Educational Subsystem within this educational cluster by creating their own programs for training, or even schools and campuses. Thus, the main task of the Educational Subsystem is covered by the incubators themselves, capitalizing knowledge, patents, and startup companies (see 2.4.2 The Subsystems of the Triple Helix Model). This targeted and extensively engaged education, which partly addresses even students, probably pursues the goal of forming and training human capital especially in the context of entrepreneurship early on. The hypothesis that students reflect an important resource is therefore also confirmed by the results of the analysis. The secondly high registered in the networking cluster is also contributing to this, but in interaction with the subsystem. By “acting as networker“ between startups and e.g. professors, the incubators analysed cooperate with educational institutions to advance education and respectively innovation (Busch & Barkema, 2020). If lastly the content or service cluster is added, the analysis shows, that all the three major resources (people, facility and education) are fed in to the cooperation between incubator and the subsystem analysed (Feld, 2020). Ultimately, the Educational System also proves to be a cornerstone for some of the incubators, taking on administrative and operational roles. However, this is only rarely the case. The incubators analysed are focussed on university business and research not on real business (Barbero et al., 2012). However, these institutions should not be neglected in

any way, as spin-offs from universities also have great potential besides the ones from companies.

### **5.3 Economic Subsystem**

The third and last subsystem of this analysis, is the Economic one, representing the one with the most interactions. It contains five clusters, including a total of twenty-two second-order codes. Looking at the operational or administrative level, a similar picture to the other subsystems emerges. What is special, however, is that the initiators or supervisors are not only experts from the industry, but also former entrepreneurs who may live the “Give-First-Philosophy” and thus want to lead somehow the startup ecosystem as defined by Feld (2020). Further, the examination of interactions with the Economic Subsystem emphasises the networking cluster, notably due to its inclusion of two of the most prevalent second-order codes. Accordingly, the institutions act primarily as networkers between the subsystem and startups, connecting the right people or institutions and further, to build an ecosystem. Thus, the support of companies, representing the material attribute by providing HR as well as marketing consulting is approved (see paragraph 2.3.2 Service Provider & Large Companies). Besides that, the analysis also reveals a direct way of interaction as partners with the industry, initiating e.g. accelerator programs or mentor networks (Feld, 2020; Spiegel, 2017). The basic idea behind why the industry supports the programmes could be, for example, that the startups solve their current challenges or that the startups develop products and services that could be of interest to the industry as a customer. In both cases, it contributes to collaboration, a safer environment for founders and the growth of the economy. Finally, it is worth noting that the greatest emphasis is placed on role reversal, where incubators act as Economic System by investing in startups. The money is provided by the industry, e.g. by family businesses or angels, and the incubators are the executive institutions that take over the investment. One reason for this could perhaps be the more direct contact between incubators and the start-up teams, which need financial support in the early stages (Hahn, 2022; Hsu et al., 2013).

### **5.4 Conclusion and Limitation of Research**

The qualitative analysis of the 100 top-ranked incubators in Europe shows that cooperation approaches already exist and that some of the subsystem areas of the Helix Model are even covered by the incubators themselves. Nevertheless, it must be pointed out that the analysis carried out, covers only a superficial view of the interaction

between incubators and the subsystems. In order to gain a deeper understanding of the cooperation, it is advisable to split the Helix Model, analyzing the subsystems separately from each other. Accordingly, it would not be sufficient to use the websites as a basis for research as it was done for this thesis. It would be recommended to get in direct contact with the incubators in the form of questionnaires or interviews.

## **6. Introduction and Implications for the local Incubator brigk**

After the previous chapter showed the results of the analysis, comparing theory and practice, the following chapter will first introduce the local incubator brigk and its current positioning in the Triple Helix Model. The results obtained by analyzing the one hundred incubators are then compared with the current activities of the local incubator brigk, and lastly recommendations for action are given.

### **6.1 Introduction of local Incubator brigk**

Besides forty general and technology-oriented institutes, brigk – Digitales Gründerzentrum der Region Ingolstadt GmbH is part of the nineteen digital startup incubators in Bavaria. Consequently, its offers are aimed for founders with a clear technology and digital focus of their business idea (Gründerland Bayern, 2024).

The services provided range from physical infrastructure, such as offices, coworking, meeting rooms and makerspace, to a strong network with established companies and universities, individual coaching, workshops, panel discussions and conferences.

To cover the wide range of support, brigk is fragmented into three sub-brands. brigk focus diverse when it comes to the industry affiliation of a technology and digitally oriented venture. Its area of activity is however clearly set on a regional level. brigkAIR, on the other hand, goes beyond national borders and has a clear focus on innovations in the three-dimensional mobility sector. The brigk Makerspace as the third part represents the link between these two incubators and is intended for prototyping construction and small series production by the startups. Nonetheless, the three brands will be even more closely interlinked in the future. For the following comparison, the GmbH is already seen as one entity.

If one looks at the financial and shareholder structure of the GmbH, brigk is supported in different ways. In addition to the funding of Gründerland Bayern and the Bavarian State Ministry, brigk is aided by fourteen shareholders (see Figure 11). Including well-known and regional companies such as Audi, Media-Saturn Holding and Continental. The city of Ingolstadt has the largest share at 35%. The districts of region 10,

Pfaffenhofen a.d. Ilm, Neuburg-Schrobenhausen and Eichstätt also support the incubator (brigg, 2024).

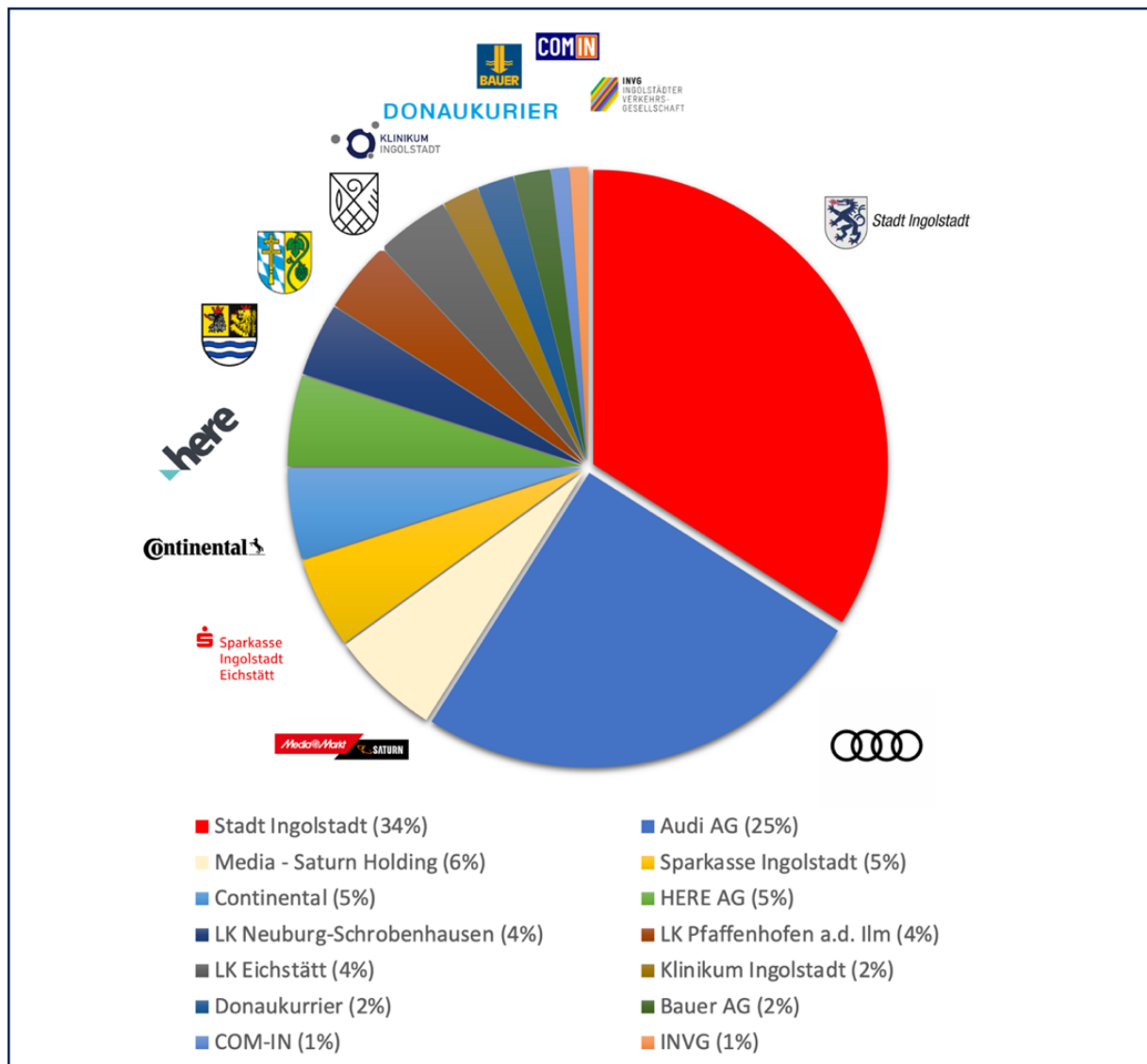


Figure 11: Current Shareholder of brigg GmbH

## 6.2 Current Positioning of the local Incubator brigg

As already mentioned, brigg offers a wide range of services, and a first impression of how the company is structured was given above. To ensure an even deeper basis for the comparability of brigg and the results from the qualitative analysis in this thesis, the incubator is also analyzed in ATLAS.ti and further supplemented with internal knowledge, being not visible on the webpage. The clusters formed when examining the top one hundred incubators within Europe are taken as a basis. The following figure shows the current positioning, precisely the interaction of brigg and the three

subsystems of the Triple Helix Model. A partial view for the individual subsystems can be found in the appendix 4-6.

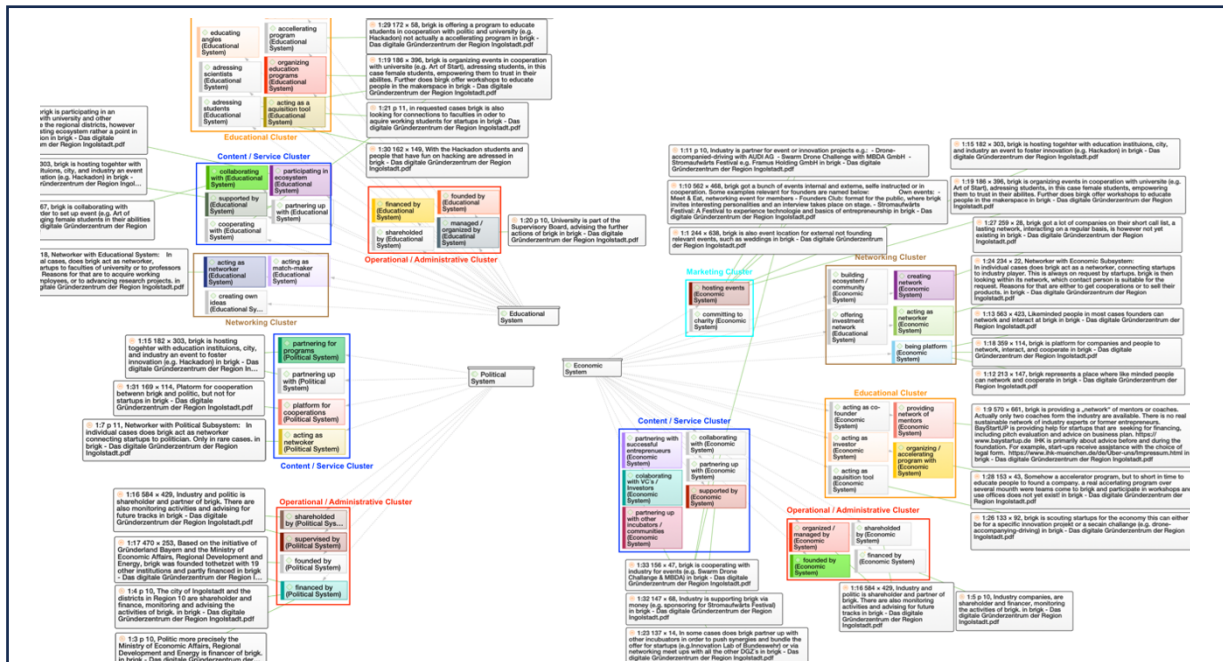


Figure 12: Current Position of brigg within the Triple Helix Model

### 6.3 Data Comparison and Recommendations for brigg

Since the previous chapters introduced the local incubator and its positioning within the Triple Helix Model, this last part intends to work out possible recommendations for action at brigg, answering the third and last research question. The suggestions are cluster according to the three subsystems and described in more detail below.

#### 6.3.1 Comparison of the Political Subsystem and brigg

Looking at the first subsystem, it becomes clear that the results from the qualitative analysis are very similar to those of brigg, especially in the administrative or operational cluster. brigg is also initiated and proportionally financed by the Bavarian Ministry of Economic Affairs. Furthermore, it is partly monitored by the city of Ingolstadt. Accordingly, no recommendations are necessary for the current company structures. The situation differs when comparing the content or service cluster, in which especially the initiation of an accelerator program was highly prevalent by the examined incubators. Efforts and approaches are already made by brigg, implementing programs in cooperation with politics or the city of Ingolstadt (e.g. Hackadon). However, these are formats that primarily cover the pre-foundation phase and do not exist for already founded and therefore the targeted start-ups by brigg. Further, are

these only for a short duration. It is therefore advisable to create an offer with the political system that also addresses companies that have already been founded, supporting them in the long run. One example that is also revealed in the analysis could be a cooperation program over a defined period of time, in which problems of the city or politics are addressed by the startup' offers and the necessary resources are made available for implementation by the Political Subsystem. Furthermore, the individual network effect between startups and politics should also be obtainable for more startups on a regular basis. brigk could therefore position itself more strongly as a platform as it can be seen when examining the top European incubators. This would then lead to cooperation between startups and, for example, insurance or regulatory bodies. In principle, the necessary contacts and the network already exists. In conclusion, cooperation with the political system is already present, but as stated there is still room for improvement in some areas.

### **6.3.2 Comparison of the Educational Subsystem and brigk**

The analysis shows that especially in the educational and networking cluster an intensive interaction with the Educational Subsystem occurs. Also, brigk is already pursuing approaches, taking the role of the Educational Subsystem within the respective cluster. On the one hand with the existing offer of quarterly meetings, in which future milestones and possible problems are discussed with the founders and advice given. Representing somewhat a mentoring effect, brigk is offering one of the most frequent second order codes of the top incubators. The long years of internal expertise in various sectors of the team, however, could even further be expanded in the form of a mentor network in cooperation with e.g. the university, bringing together professors and scientists with the problems and challenges of the founders. Thus, offering an in-depth mentoring. This network should, however, always be maintained and be resilient and accessible in the long term. Since the connection often disappears after the departure of individual persons in the counterpart institution, this project proves to be extremely difficult to set up. With the already above-mentioned programs, brigk is also taking on another educational role highly valued by the incubators analyzed. Besides addressing students and ideas, brigk should, nevertheless, also offer programs supporting scientists and ventures that have already been founded. Especially with the uniquely prevailing conditions in Ingolstadt, great education & industry location, this could be a USP in the long run for Region 10. Accordingly, a guided and scripted accelerator program, maybe even tailored to the startup phases,



could add real value. This should not be done in isolation from the university or the politic system, but in interaction with all three helixes and parties of the innovation model, strengthening also long-term cooperations on the content or service level. However, due to this high density of knowledge education and transfer by the respective institutions (THI, CoE, Carissima), it is not advisable to initiate a completely new campus by brigk, as it is the case with some of the top one hundred incubators. In line with the previous points, brigk has also some potential in the networking cluster. For example, the networking that is currently taking place on demand could be easier and more targeted in the future if there is a reliable and constant network of mentors, respectively in long-term cooperation with the educational parties. This would allow potential problems or challenges to be dealt with at an early stage, but also promote the recruitment of new entrepreneurs or employees for the startups.

Looking at the operational or administrative cluster, it becomes clear that the results from the qualitative analysis are very similar to those of brigk. Accordingly, it is not a cooperation, but rather the subsystem more precisely the university takes on an advisory role as part of the Supervisory Board. Due to the existing and defined structures, no suggestions for interaction are recommended here.

### **6.3.3 Comparison of the Economic Subsystem and brigk**

The last comparison includes the economic system, which is also confirmed in the analysis of brigk to be most second-order coded. Above all, the comparison shows that there is a large deficit in the provision of liquid funds. Accordingly, there is no possibility for young innovative companies to be financed at brigk. However, the results of the qualitative analysis show different ways in which the financing arm can be covered. For example, brigk could support an association of several local family businesses, whose contributions would provide the innovative ventures with financial support. Or the development and maintenance of an investor or angel network, whereby investments are made based on regular pitching events. Both would help to strengthen and deepen cooperation with the educational subsystem. Further, the comparison reveals, that brigk got also huge opportunities in the networking cluster, connecting startups and industry. Instead of the existing individual solutions, consideration should for example be given to initiate a mentoring network consisting of industry experts. By mobilizing the industrial ventures shareholding brigk alone, an initial pool of experts could be established. This could improve networking, supply and the promotion of start-ups to the industry and vice versa. However, due to the “people business” theory

this project is very difficult to be provided in the long term. Lastly, as already mentioned in the other subsystems, consideration should also be given to set up an accelerator program in cooperation with all three helixes. In this way, skills and knowledge can be made available in a centralized and structured manner.

#### **6.4 Conclusion of the suggestions to brigk**

The suggestions made in the above paragraphs, deepening the offer of brigk were primarily limited to the interactions that occur most frequently in the results of the qualitative analysis. Nevertheless, three fundamental points can be concluded and highlighted, enriching brigk offerings to startups in the long term. First, there is a great opportunity for the provision of finance in cooperation with the economic system. Secondly, the collaboration of all helixes got the potential to develop a mentor network, consisting of industry expert, scientists, and professors. This would also reinforce a guided program, known as an accelerator program for startups. Concluding this chapter, it should be noted that the points mentioned are only suggestions and require further analysis to determine whether they can be implemented.

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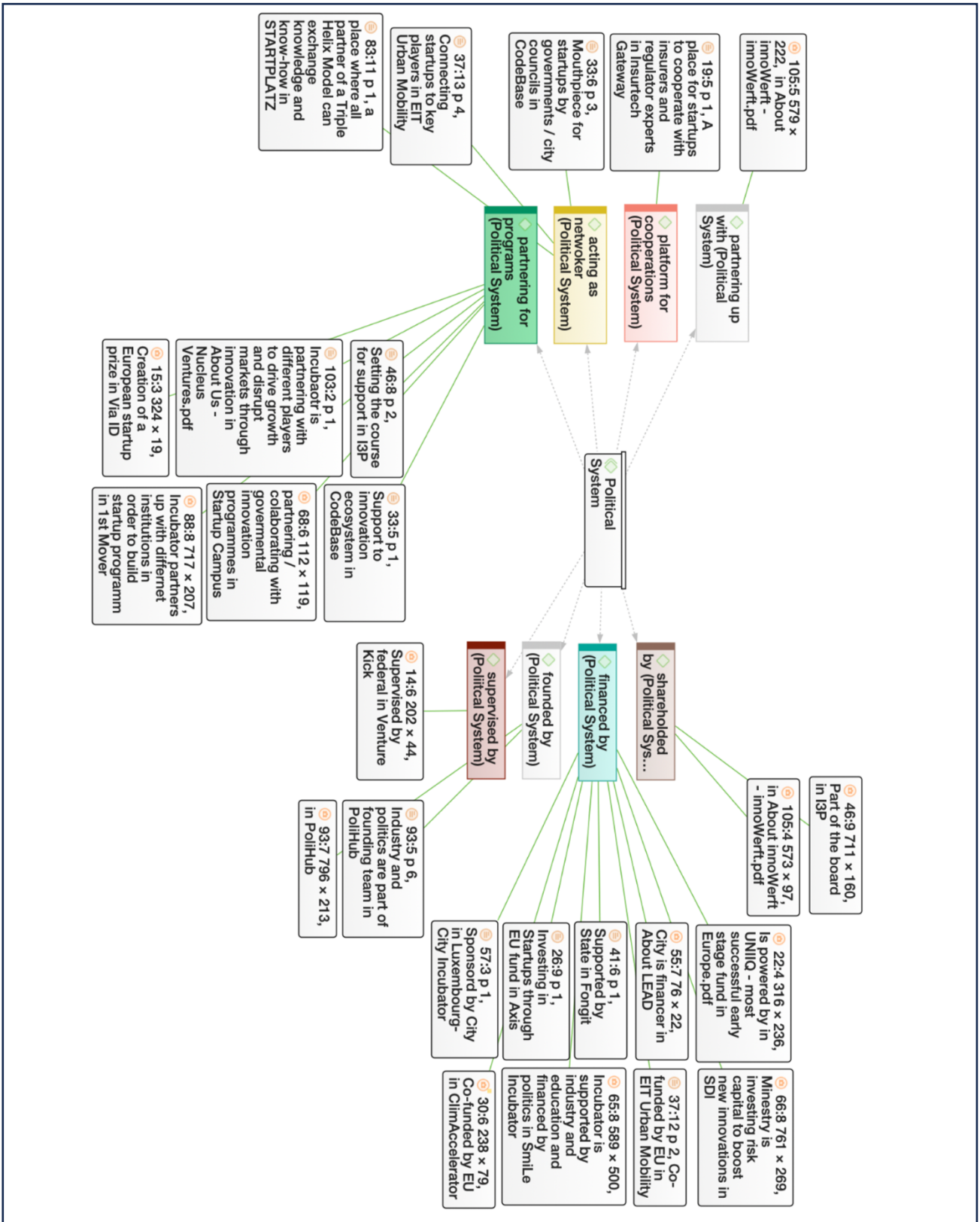
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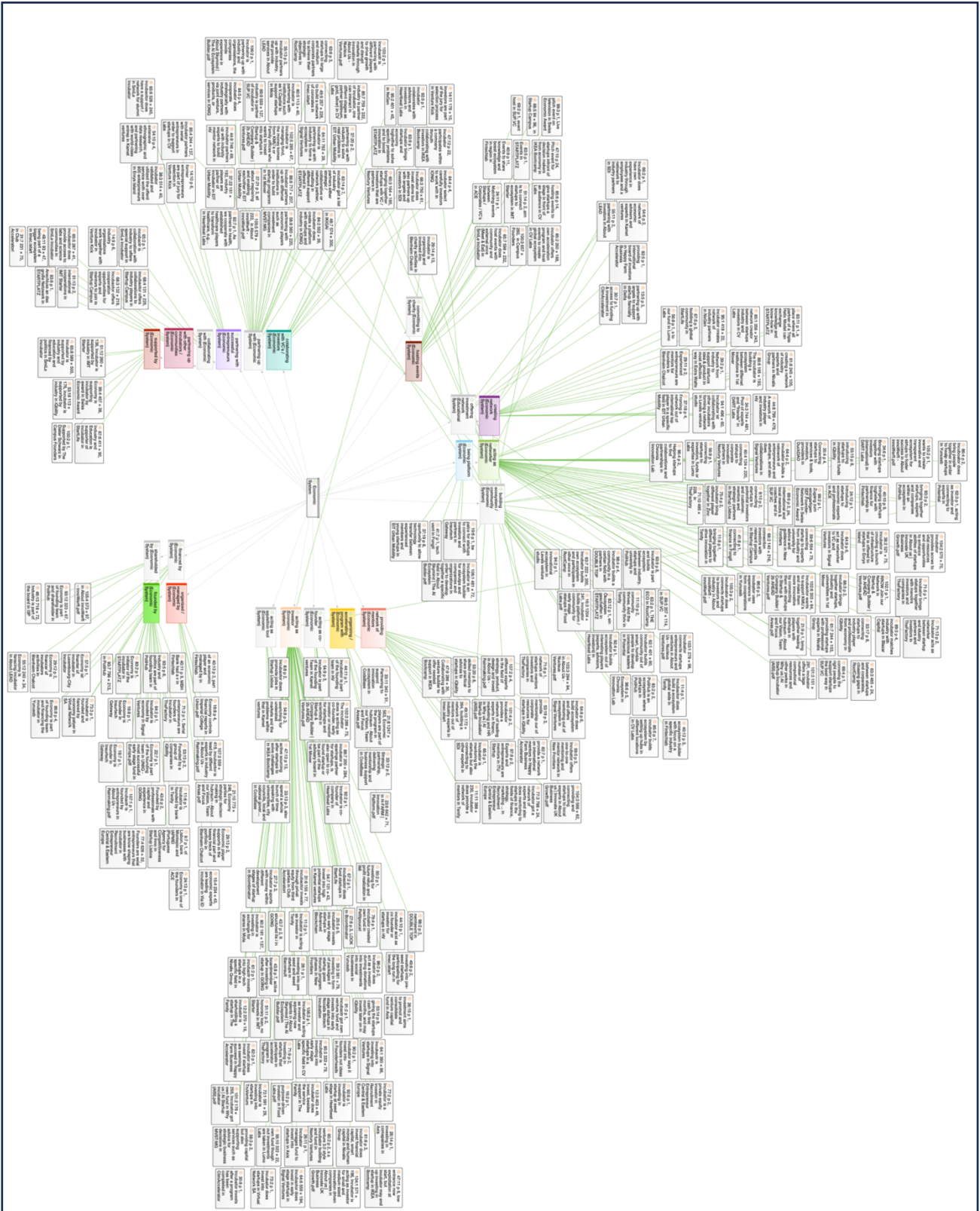
## Appendix



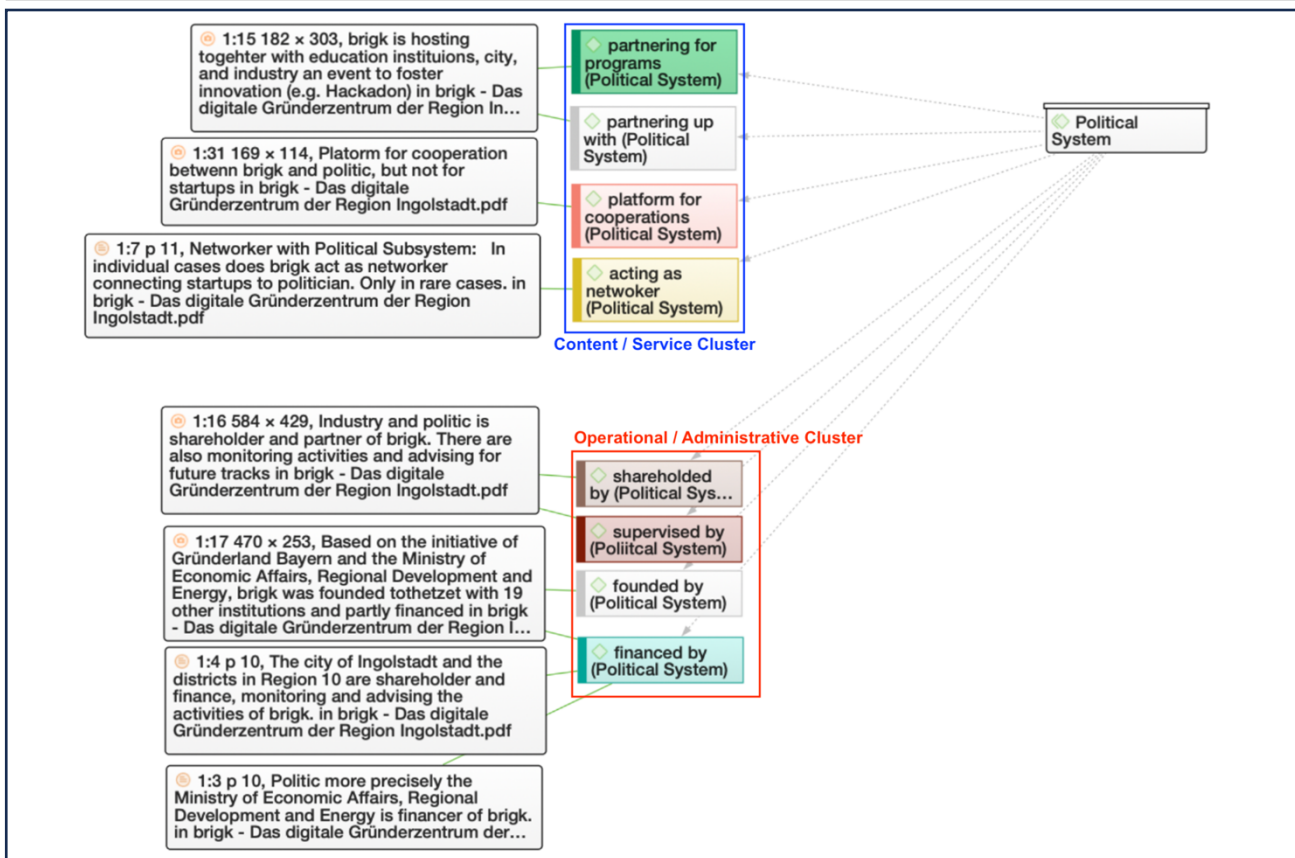
Appendix 1: Total Network Overview Political System



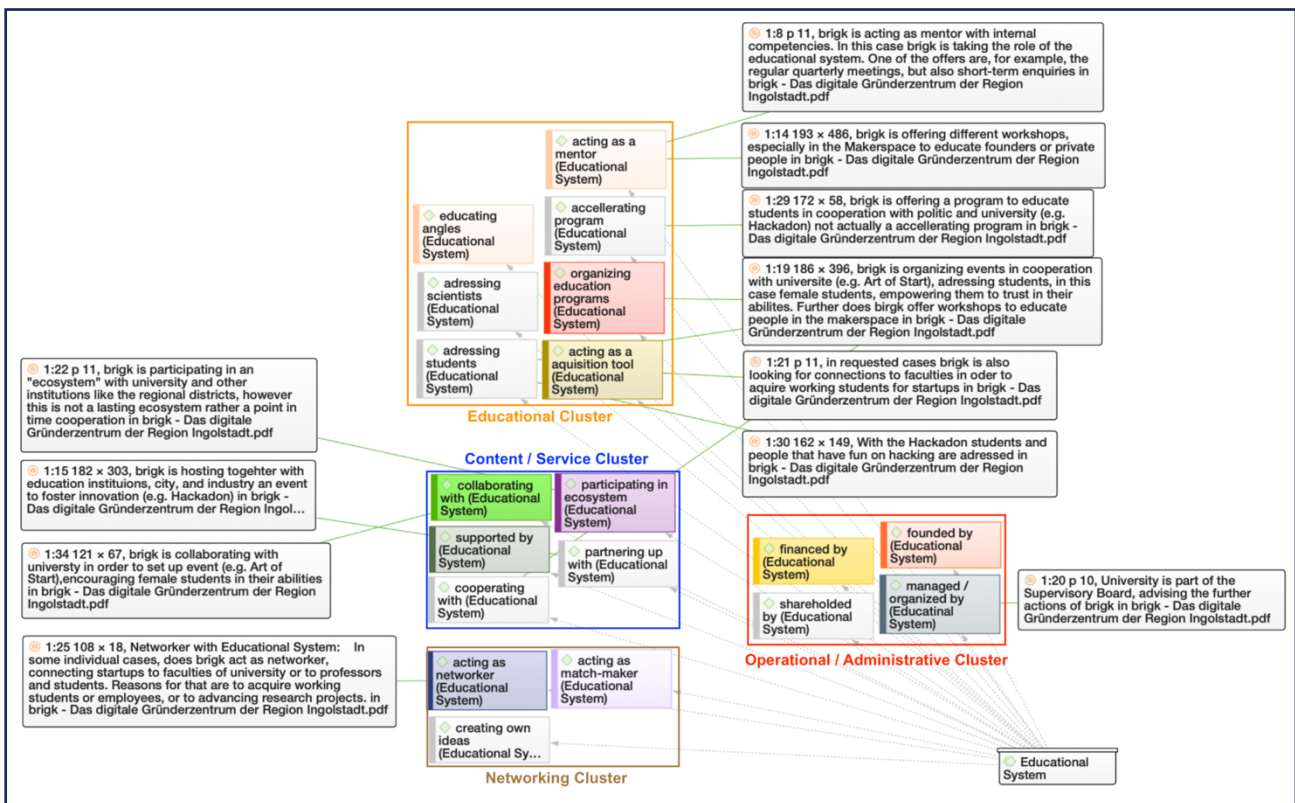




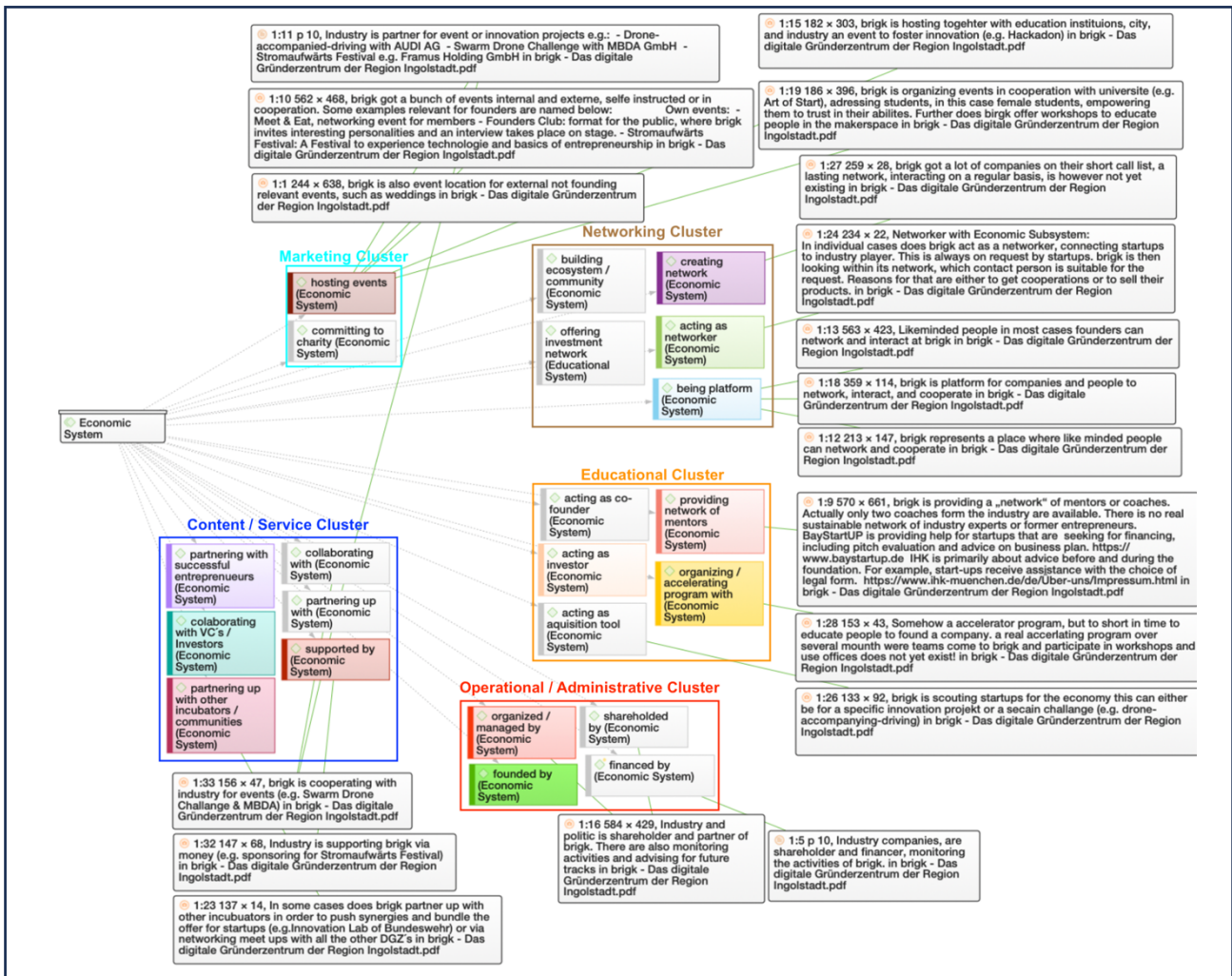
Appendix 3: Total Network Overview Economic System



Appendix 4: Partial Overview brigg with Political System



Appendix 5: Partial Overview brigg with Educational System



Appendix 6: Partial Overview brigg with Economic System

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**Declaration by § 30 Para. 4 Nr. 7 APO THI**

I hereby declare that this thesis is my own work, that I have not presented it elsewhere for examination purposes, and that I have not used any sources or aids other than those stated. I have marked verbatim and indirect quotations as such.

Ingolstadt, 12.06.2024



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Maximilian Aschka