Master Thesis

__Geschäftsmodellentwicklung für das automatische, digitale Lizensierungsservice DALICC entlang des Business Model Canvas__

__Business model development for the automated rights and licenses clearing service DALICC along the Business Model Canvas__

by Clemens Seeberg-Elverfeldt

Student Number (Matrikelnummer): mmm161840

Assessor (Begutachter): FH-Prof. Mag. Dr. Tassilo Pellegrini

Secondary Assessor (Zweitbegutachter): FH-Prof. Dr. Jan Krone

St. Pölten, am ....

1. Abgabe

Ehrenwörtliche Erklärung

Ich versichere, dass

- -ich diese Masterarbeit selbstständig verfasst, andere als die angegebenen Quellen und Hilfsmittel nicht benutzt und mich auch sonst keiner unerlaubten Hilfe bedient habe.

- -ich dieses Masterarbeitsthema bisher weder im Inland noch im Ausland einem Begutachter / einer Begutachterin zur Beurteilung oder in irgendeiner Form als Prüfungsarbeit vorgelegt habe.

Diese Arbeit stimmt mit der vom Begutachter / von der Begutachterin beurteilten Arbeit überein.

....
Ort, Datum

....
Unterschrift

DANKSAGUNG

An dieser Stelle möchte ich mich bei allen Personen bedanken, die mich auf dem Weg meines Studiums sowie bis zum Abschluss meiner Masterthesis begleitet und unterstützt haben.

Besonderer Dank gilt meiner wundervollen Ehefrau Tamara, die mich stets liebevoll unterstützt und mir, wenn nötig, immer den Rücken frei hält.

Ebenso möchte ich mich besonders bei meinen beiden Eltern Katja Mohrenschildt und Lutz Seeberg-Elverfeldt bedanken, die mich in diese Welt gebracht und immer an mich geglaubt haben.

Darüber hinaus danke ich meinem Trauzeugen und langjährigen, wahren Freund Justus Tilse, auf den man sich in jeder Lebenslage verlassen kann.

Dank gilt auch meinem Schwiegervater Valentin Müller, der diese Arbeit für mich korrekturgelesen hat sowie meinem Bruder Felix, meiner Großmutter Edith und meiner gesamten restlichen Familie und meinen Freunden, die mir privat ein Maß an Rückhalt geben, das man sich nur wünschen kann.

Abschließend möchte ich noch meinem Arbeitgeber Thomas Salzer für die Möglichkeit danken, mir meinen Lebensunterhalt neben meinem Masterstudium im Marketing bei der Tosaco GmbH verdient haben zu dürfen. Ich habe dort ein sehr spannendes sowie menschlich angenehmes Arbeitsumfeld vorgefunden.

Zusammenfassung

Diese Arbeit untersucht, inwiefern sich das bereits in Entwicklung befindliche automatisierte Lizensierungsservice DALICC in Form eines wirtschaftlich effizienten Geschäftsmodells umsetzen lassen kann.

Die theoretischen Grundlagen dieser Arbeit fußen auf der Service Science, sowie den Economics of Platforms. Beide dieser Theoriegebilde sind Überbegriffe für das theoretische Fundament der meisten heutzutage erfolgreichen digitalen Geschäftsmodelle. Schlüsselunternehmen wie Amazon oder Google sind beispielsweise beide Plattformen, welche sich auch der theoretischen Grundlagen der Economics of Platforms sowie der Service Science bedienen. Auch das Modell des homo socialis, der durchaus als Alternativmodell zum homo oeconomicus verstanden werden kann, findet in dieser Thesis Anwendung.

Im empirischen Teil der Arbeit wurde eine Konkurrenzanalyse durchgeführt, bei welcher die Konkurrenten nach den Faktoren Service Portfolio, Value Creation und Revenue Model durchleuchtet wurden. Die Schwierigkeit der Konkurrenzanalyse bestand vor allem darin, dass unterschiedliche Auffassungen vom Begriff "License Clearing" bestehen. Aus diesem Grund wurden die Konkurrenten in zwei Gruppen geteilt: "vendor specific" und "vendor neutral".

Abschließend wurden diese mittels einem Analysetool aus den theoretischen Grundlagen der Economics of Platforms, welches zum Vergleich digitaler Geschäftsmodelle in normativer Art kreiert wurde, eingeordnet. Dies ermöglichte auch einen besseren Vergleich von DALICC hin zu seinen potenziellen Konkurrenten.

Im finalen Teil wurde Business Model Canvas für je vier unterschiedliche Geschäftsmodellszenarien entwickelt. In jedem dieser Szenarien wird zusätzlich eine SWOT-Analyse durchgeführt, sowie eine Empfehlung für die jeweilige Rechtsform abgegeben.

In der Conclusio werden alle Szenarien, welche sich aus einem Zusammenfluss der theoretischen Grundlagen und der Konkurrenzanalyse ergeben haben, überblicksmäßig noch einmal behandelt und zusammengefasst.

Die Szenarien beinhalten: DALICC als reine Web Service Application, DALICC als Web Service Application mit der Erweiterung der Funktionen und Services auf eine App, DALICC als verstärkt auf Community Participation und Prosuming setzendes License Clearing Service und DALICC als Web Service Application mit der zusätzlichen fünften Funktion des Real Time License Clearing.

Abstract

This paper examines to what extent the automated licensing service DALICC, which is already under development, can be implemented in the form of an economically efficient business model.

The theoretical foundations of this thesis are based on Service Science and the Economics of Platforms. Both of these theoretical structures are umbrella terms for the theoretical foundation of most of today's successful digital business models. Key companies such as Amazon or Google, for example, are both platforms that also make use of the theoretical foundations of Economics of Platforms and Service Science. The model of homo socialis, which can certainly be understood as an alternative model to homo economicus, is also applied in this thesis.

In the empirical part of the thesis, a competitive analysis was carried out in which the competitors were screened for their service portfolio, their form of value creation and their revenue model. The main difficulty of the competitor analysis was that there were different interpretations of the term "license clearing". For this reason, the competitors were divided into two groups: "vendor specific" and "vendor neutral". Finally, these were analyzed using a tool from the theoretical foundations of the Economics of Platforms, which was designed to compare digital business models in a normative way. This also made it easier to compare DALICC with its potential competitors.

In the final part, Business Model Canvas was developed for four different business model scenarios. In each of these scenarios, a SWOT analysis is also carried out and a recommendation is given for the respective legal form.

In the conclusion, all scenarios that have arisen from a confluence of the theoretical foundations and the analysis of the competition are once again dealt with and summarized in an overview.

The scenarios include: DALICC as a pure Web Service Application, DALICC as a Web Service Application with the extension of functions and services to an App, DALICC as a License Clearing Service focusing increasingly on Community Participation and Prosuming and DALICC as a Web Service Application with the additional fifth function of Real Time License Clearing.

Table of Contents

List of figures and tables

1 Introduction

1.1 Problem, objective, interest in knowledge

This paper examines to what extent the automated licensing service DALICC, which is already under development, can be implemented in the form of an economically efficient business model.

To this end, a general competitive analysis is carried out and a business model developed along the business model canvas on the basis of theoretical principles and in the areas of "Service Sciences" and "Economics of Platforms". Both of these theories, as well as the concept of using a business model canvas in order to map and describe a business as well as its potential competitors, have already proven themselves in practice (Osterwalder/Pigneur/Clark, 2010, p. 15). In this context, the business model canvas will definitely have to be adapted to the particularities of the digital economy in which DALICC operates.

Finally, the 4 different possible business models presented in the four scenarios are summarized in a SWOT analysis and given a recommendation of a suitable legal form.

The thematic complexity owed to the topic of this thesis is the reason why it may be difficult, if not impossible, to read individual, isolated chapters. In order to understand the case study conducted here in its entirety, the author finds it necessary to consider some already explained and treated theoretical bases or considerations in the following chapters as explained and therefore chooses not to repeat them. Furthermore, basic terms from the field of IT are not explained or described separately in this thesis, but are assumed to be a necessary basis.

1.1.1 What is DALICC

But first we will get to the question of what DALICC really is and what kind of services it aims to offer its users. The service describes itself as follows:

> "DALICC stands for Data Licenses Clearance Center. It is a software framework that supports legal experts, innovation managers and application developers in the legally secure reutilization of third party data sources. The DALICC framework supports the automated clearance of rights, thus helping to detect licensing conflicts and significantly reducing the costs of rights clearance in the creation of derivative works. (DALICC Proposal, 2015, p.4)"

The concept of derivative works in this context doesn't only pertain to the world IT products and services, but also to any kind of derivative physical product. The term derivative work itself is best described, however, as something "that builds on, or reassembles, with some degree of originality, existing works" (Article 2(3) of the Berne Convention on Copyright in DALICC

Proposal, 2015, p.5). Every possible product or service that in some way or another needs to evaluate its own stance on license compatibility is a possible customer of DALICC.

As we will further discuss in chapter 2 "Theoretical framing" the ever-growing complexity of today's intertwined and fragmentized digital economy, when providing any product or service, time and cost-reduction are of the essence. This is best explained with the following practical example. Whether it would be a start-up enterprise or an already well-established one, both have to deal with the following problems: when dealing with an over-abundance of different individual licenses and contracts, transaction costs rise, expertise enabling the detection of potential license conflicts is scarce, and resolving those possible conflicts results in time-consuming negotiations. In order to tackle those problems, DALICC offers four key functions: a license composer which lets users create customized licenses, a license library which lets users choose from a set of standard licenses, a license annotator which provides users with a machine- and human-readable version of their license(s) and a license negotiator that enables users to check for compatibility, detect possible conflicts and supports them in resolving these conflicts (DALICC Proposal, 2015, p.4).
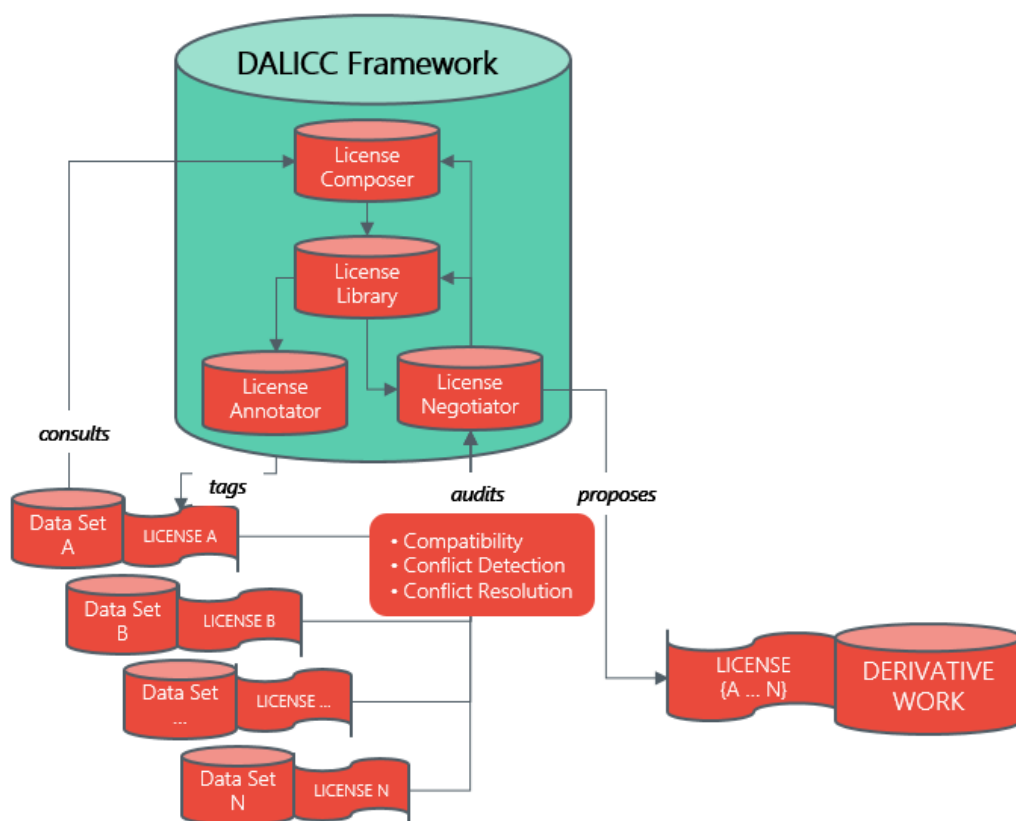

Figure 1: Functionalities of the DALICC-Framework - own graphic based on DALICC Presentation Semantics 2017-09-12

So given the information above on how the service itself works, the key user base that DALICC is specifically aimed at are "legal experts, innovation managers […] application developers" (Pellegrini, 2017, p.1) and "commercial data suppliers, commercial data aggregators, app developers and service providers, law firms and legal divisions of companies or public organizations and open source and open data initiatives" (FH St.Pölten Research Projects, n.d.).

The complexity of any such licensing issues, either in a semantic or a very basic legal way, entails that a correct legal interpretation of any such issues must be ensured within the framework of DALICC. This is due to the fact that DALICC can potentially offer its services worldwide and has to uphold and take into account each nation's individual legal structure when it comes to issues of licensing. Therefore "legal experts from inside and outside the DALICC consortium will check the legal validity of machine-readable licenses and the output of the reasoning engine for compatibility with applicable laws" (Pellegrini, 2017, p.5), meaning DALICC cooperates with lawyers specialized in licensing, who ensure the validity and precision of any and all functions it offers regarding license clearance of any sort.

Serving as an enabling service for intermediaries (Deloitte, 2012, p.5), DALICC aims at closing "the existing gap between the technological capabilities to create and publish data, and the legal infrastructure necessary to provide them on a legally secure basis for reuse […] [and thereby it serves as] a tool that puts data policies into practice and thus facilitates data governance" (Pellegrini, 2017, p.7).

Concerning the areas of prosuming (i.e. the involvement of consumers as potential producers), DALICC too offers interesting capabilities for its customers and community which can best be explained in the following example: If a company creates its own custom license in the License Composer, as the licenses in the License Library may not be sufficient, it can upload this new custom license to DALICC. The benefit for the company in this case is, that the community gives feedback via community review on the usability of this license. This in turn allows said company to evaluate whether the custom license they have created is actually capable of achieving the tasks it was meant to achieve.

1.1.2 Objective

The objective of this study is to analyze the existing market of license clearance and retrieve as much information as possible on DALICC's potential competitors in order to develop a sense for the currently existing supply and demand structure within that particular market. Furthermore this study builds upon theoretical backgrounds like Service Sciences and

Economics of Platforms which have both shown to be at the core of already successful business models in today's data driven economy.

Building upon both theoretical principles and a competitor analysis, the goal is to then identify a series of potential business model scenarios for DALICC and find a fitting legal form.

These measures aim at ensuring that Data Licenses Clearance Center (DALICC) is not only a functional rights clearance framework, but also has the capability and the means to sustain itself economically.

1.1.3 Interest in knowledge

The motivation for this research derives from the fact that DALICC is a real project that has already gained widespread interest from the Austrian Research Promotion Agency (FFG) and won the first prize in the category of Innovation and Technology at the Imagine17 Conference held by the Austrian Ministry for Transport, Innovation and Technology in 2017. But even more so, DALICC aims to tackle a highly important field in the area of licensing. The need for cost and time-efficient license clearance is only going to grow in the upcoming years, due to "phenomena like open data, open innovation, and crowdsourcing initiatives as well as the increasing interconnection of services, sensors, and (cyber-physical) systems" (Pellegrini, 2017, p.1). The use for services like DALICC does, however, not only exist within the realm of software of digital businesses but also within businesses that concern themselves with the production of any kind of physical product. Since DALICC's general structure allows license clearance of either physical or digital products, this opens up a much broader spectrum of possibilities.

In today's world globalization and continuous technological revolutions like Web 2.0 or digitalization in general are leading to an economy where the production and provision of physical as well as digital goods and services are becoming more and more intertwined (Helbing, 2013, p. 4). In a European context this is highly important, since the European Commission outlines their strategy for a "data-driven economy […] [in] nurturing a coherent European data ecosystem […], stimulating research and innovation around data […] [and] putting in place a specific set of actions to improve the framework conditions for extracting value out of data" (European Commission [a], 2014). As this paper is being written, the Commission's strategy outline is already four years old and the General Data Protection Regulation (GDPR), an EU regulation focusing on matters of data protection which came into effect on May 2018, shows that Europe is already in effect dealing with that so-called data-driven economy (European Commission [b], n.d.).

4

Furthermore, the World Bank views the economic potential of working with any form of data, in particular Open Data, to be significant (World Bank, 2014, p. 8). Going even further than that, there is a real competitive edge to be had in the area of intermediaries and enabling services. Intermediaries can be understood as those who provide a service between the provider and the user, effectively linking them and possibly even making any form of transaction between those two possible (Brousseau/Penard, 2007, p. 82). Supporting that thesis is a study by Oxford Economics and Cognizant Technology Solutions which argues, that "competing based on meaning and insight will be the biggest value lever in […] business [and] the companies that ultimately win — those that de-code the new economics of meaning-making — will be the ones that link these pieces together" (Roehring/Pring, 2013, p.28).

There could hardly be a better argument made for the field that the DALICC-framework is aiming to operate at, which also corresponds to the previously outlined high expectations of both the World Bank as well as the EU Commission:

> "The goal of making business meaning is not merely to drive down costs and improve efficiencies, but to actually change the way companies make new products, serve their customers better and manage risk. This requires integrating next-generation analytics into the full range of business processes as outlined above. Done properly, the insights derived by linking previously disparate bits of data can become the sparks that ignite rapid innovation" (Roehring/Pring, 2013, p.11).

Digital economics changes the understanding of innovation not only in terms of business processes but also in terms of license management, i.e. precisely the area on which DALICC focuses. The success of things like open source software proves that the common logic that strong ownership rights of innovators are a condition for high dynamics in innovation processes is simply a wrong assumption (Brügge et al., 2004, p.1).

So "linking previously disparate bits of data" (Roehring/Pring, 2013, p.11) is not only a field of business that shows significant economic potential (World Bank, 2014, p. 8), but also may lead to further "rapid innovation" (Roehring/Pring, 2013, p.11) throughout the economy, resulting in potentially beneficial outcomes for everyone. This potentially mutually beneficial situation is at the core of the homo socialis-paradigm, described in chapter 2 subsection 2.2 which, in reverse, serves as one of the foundational thoughts of the "economy 2.0" or "participatory market society" (Helbing, 2013, p. 6) that intermediary frameworks or services or even already financially successful business like Facebook are based upon.

Considering prognoses for market growth within the digital sector, it is estimated that there were about 6.1 million people who "collect, store, manage and analyze data as their primary [job] activity"(IDC & Open Evidence, 2015, p.17) in the European Union in 2014 showing a 2.2% growth rate compared to the year before (ibid., p.17). Up to the year 2020, the estimate

in growth of potential employees is anywhere between 0.6% up to 12.6% (ibid., p.25). These numbers merely apply to the EU.

Establishing a web-based framework like DALICC, with all of its key descriptions and functions being designed in English, this gives access to a much bigger market, meaning a global one. But even more so its "technical components are generic in design and can be extended to other areas of rights clearance like privacy law or competition law, thus extending its applicability to content or software and stimulating the expansion of the data economy" (FH St.Pölten Research Projects, n.d.).

Due to the reasons stated above, license clearance as an enabling service or intermediary in the area of digital business models appears to be a very promising field of research.

1.2 Structure and methodology

Firstly this study will lay out a theoretical framework upon which frameworks, platforms or services like DALICC are based upon. This theoretical framework consists of 2 main parts: "Service Science" and "Economics of Platforms". Both are quintessential in understanding how to categorize DALICC as well as its potential competitors, and laying forth a structure upon which to successfully build recommendations for DALICC business model. Since the theoretical background for this study is relatively new, the most valuable input is to be expected in the form of more recent scientific works like scientific journals and studies composed by think tanks or both governmental and non-governmental organizations, like the EU or the World Bank.

After a more detailed explanation of the theoretical framework, the method section explains in more detail how the competition analysis was carried out, what the concept of the Business Model Canvas consists of, how it works and how it was applied to the individual possible scenarios for DALICC. Chapter 4 then looks at the competitive analysis of DALICC's potential competitors and examines them according to their service portfolio, their method of value creation and their revenue model. The aim of this particular structure is to define a comparable framework for the individual potential competitors. As DALICC's service portfolio is within a very specific area, potential competitors are not expected to focus on exactly the same. Some competitors may serve similar areas or sub-areas, while others may focus on a completely different understanding of licensing or license clearance.

The conclusions drawn from these (possibly) different business models or service portfolios can be found in Chapter 5 "Discussion". Chapter 6 then deals with the direct application of the business model canvas using various possible scenarios for DALICC. These are summarized in a brief overview of strengths, weaknesses, opportunities and threats for a better overview

followed by the recommendation of the legal form. However, at this point, all four factors are not compared with each other as is common for in a SWOT analysis, as the summary and comparison of the individual scenarios is carried out in chapter 7 Conclusion.

Chapter 7 then deals with the conclusion of the work and summarizes it once again in order to give the reader the best possible choice in the scenarios described beforehand, according to the author's opinion. This chapter is then followed by a structured list of sources and any annexes.

2 Theoretical framing

This chapter aims to lay out the theoretical basis upon which the empirical section is based. This means that, concerning DALICC's business model, the author identified two main trends that shape and define the economic basis of digital business models in this day and age: the so-called service science(s) and the economics of platforms. Each subchapter will go into further detail upon why these topics are important for this case study.

Before getting into the main sections of theory, it is important to address what a **business model** actually is and how it correlates to this study.

A business model is a model of how an organization or company can create added value for customers and secure a return for the organization (Grösser, n.d.). According to a study on the frequency of the term being mentioned in business newspapers such as WirtschaftsWoche, Focus Magazin, Capital, Frankfurter Allgemeine Zeitung and Financial Times Deutschland, the term "business model", or at least its German counterpart "Geschäftsmodell", supposedly originate somewhere between 1998 and 2001 (Grösser, n.d.). The term has established itself above all in the area of strategic corporate planning, but even in the area of non-profit organizations which sometimes also formulate their activities through business models (Bieger/Knyphauseß-Aufseß/Krys, 2011 p.1). Basically, all business models more or less deal with the following topics: how value creation can be achieved on the market, how customers have to be processed, what kind of commercialization and yield mechanisms are available, how the value chain is configured, what the focus of performance and the dynamics of development are, how product and service innovations are designed, and how all these elements can be integrated into a positive growth dynamic (ibid, p.2).

However, a clear distinction must be made between the terms "business model" and "strategy", since, especially in non-scientific publications, these two are often being used as synonyms for each-other, which is incorrect (Grösser, n.d.).

A business model describes the function of individual components of a company and how they interact with each other, meaning logical relationships between a company's business activities (ibid., n.d.). A strategy, however, describes how a company can differentiate itself from the competition and develop a sustainable competitive advantage (ibid., n.d.). Nonetheless, there is no clear or uniformly accepted definition of either the term business model or the term strategy, so a universal claim to correctness is impossible to enforce here (Bieger/Knyphausen-Aufseß/Krys, 2011 p.1).

For the aforementioned reason and because this thesis does not seek to deal with a general discussion of what a business model actually is (or has to be), it follows the definition of Osterwalder and Pigneur: "A business model describes the rationale of how an organization creates, delivers, and captures value" (Osterwalder/Pigneur/Clark, 2010, p. 14).

Since the approach by Osterwalder and Pigneur welcomes the use of a business model canvas "like a blueprint for a strategy to be implemented through organizational structures, processes and systems" (ibid., p. 15 f.) their definition of "business model" and their approach are in line with the objectives of this thesis and are therefore also suitable as a basis for Chapter 6 (Recommendations for DALICC's business model).

Coming back to the previously mentioned distinction between strategy and business model, this thesis, based on Osterwalder's and Pigneur's considerations, does not consider such a clear distinction as necessary, since strategies for DALICC can be derived directly from the competitive analysis carried out here, the business model Canvas and the various scenarios.

In summary, the business model concept in this study serves as a framework for structuring complex economic relationships under the conditions of service systems and economics of platforms. This is due to the fact that there is no physical product, but the service itself is the actual product through which value is being created.

2.1 Service Science

In all major industrialized nations, the service sector is by far the largest and fastest growing sector of the economy (Buhl/Heinrich/Henneberger/Krammer, 2008, p.60). Today more than 60 % of the employees in Germany and 70% in the USA work within the service sector (Maglio et al. in Buhl/Heinrich/Henneberger/Krammer, 2008, p.60). In the United States, for example, the production of physical products peaked in the 1950s and has shrunk since then. This was also the time of transition and the rise of the service sector (de Grandbois, 2013, p. 205). In 2010, the services sector generated more than 70 percent of GDP sales in the US, Canada, Australia, Japan and 10 countries within the EU and Switzerland (International Monetary Fund in de Grandbois, 2013, p. 205). The key reason for this shift of economic activity is the increased productivity within the agricultural and industrial economic sector, meaning there is less need for personnel in order to generate the same or even higher economic output (Buhl/Heinrich/Henneberger/Krammer, 2008, p.60). This is also due to the fact that society within industrialized countries has moved from an agricultural to an industrial economy and now arrived at a knowledge economy, which has led to the rise of digital technologies and furthermore a necessary increase in the service sector (de Grandbois, 2013, p. 206). The economic system of industrially developed nations has, statistically speaking, already developed into a "service economy" (Huo/Hong, 2013, p.40).

The appearance of Service Science in the field of science is to a large extent due to IBM, which had already provided for the birth of computer science by donating computers to universities within the USA (ibid., p.42). Since IBM was also looking for potential employees in this field after a shortage of specialists who should be familiar with "computer science, engineering, management [...] [as well as] social science" (de Grandbois, 2013, p. 206), they campaigned for the establishment of a multidisciplinary research area called Service Science (ibid., p. 206).

Service science aims at creating an interdisciplinary field of research in business administration, computer science, operations Research, industrial engineering, social sciences etc. All work together in order to find procedures for the systematic development and management of services (Buhl/Heinrich/Henneberger/Krammer, 2008, p.60).

> "Simply put, services are processes or performances that one person or organization does for the benefit of another. In all cases, service involves deployment of knowledge, skills, and competencies that one person or organization does for the benefit of another" (de Grandbois, 2013, p. 205).

There is, however, no uniformly accepted definition of Service Science, since there are countless definitions on and understandings within various fields of the term "science" alone and the same is true for the term "service" (Huo/Hong, 2013, p.66). In order to get to a common

understanding of what Service Science truly means, it is necessary and makes the most sense to extract a number of characteristics from the various common definition approaches, which can thus explain the term in a broader context.

One fact, despite differing views and approaches to a "kind of definition" of service science, is that service science is a "multidisciplinary approach to improve the efficiency of management in the service industry" (de Grandbois, 2013, p. 204 f.). This consideration anticipates a number of things, namely that such a multidisciplinary field is difficult to describe in the form of a common single definition or numerous individual definitions (ibid., p. 205).

The two best known perspectives in the field of service science are computer science on the one hand and business administration on the other hand. The former considers this less in terms of the area of a service in the business sense, but in terms of a technological perspective such as web services or service-oriented architectures (Buhl/Heinrich/Henneberger/Krammer, 2008, p.61). From a business point of view, there are two basic approaches to Service Science: one sees the area of service as a clear distinction from non-cash benefits, and the other one tries to give a more precise picture of the term by enumerating different services (ibid., p.61). Buhl et al. argue for the former of the two. The differentiation of services from non-cash benefits can, however, be potential-oriented, process-oriented or result-oriented (Corsten 1997, Meyer 1998 in Buhl/Heinrich/Henneberger/Krammer, p.61).

Potential-oriented definitions are based on the fact that service providers do not provide a finished product due to the immateriality of services, but the ability to provide services (Buhl/Heinrich/Henneberger/Krammer, 2008, p.61). The process-oriented definition approach focuses on the so-called Uno-Actu principle, i.e. production and sales coincide in time, i.e. consumers are also producers (prosumtion) or at least involved in production (ibid., p.61).

The result-oriented definition approaches focus on the effect on the service recipient. This means two things are important: the immateriality of services and that the result of a service only shows up exactly when it reaches the customer (Buhl/Heinrich/Henneberger/Krammer, 2008, p.61). These three approaches can also be constituted as characteristics of a service and can thus form a quasi-definition, or at least serve as a kind of checklist for identifying services on the basis of their characteristics (ibid.,p. 61).

One could therefore establish the following rule for identification: Services are 1. intangible, 2. production and consumption take place simultaneously (Uno-Actu principle) 3. service users are integrated into production (ibid., p. 61).

Another, also easily understandable definition or at least description of what Service Science means, is the following from De Grandbois:

> "Service Science is the study of services, service systems and value propositions […] [and] service systems are dynamic combinations of people, information, organizations and technology that can create and deliver services" (de Grandbois, 2013, p. 205).

However, several problems arise from this: Due to the immateriality and the simultaneous nature of production and consumption, there is a high purchase risk for the service recipient, since the quality of a service can only be assessed ex ante to a limited extent (Buhl/Heinrich/Henneberger/Krammer, 2008, p.61). This is because services in this case have similar characteristics to media goods: namely that in their quality assessment they are either goods of experience where quality can only be evaluated after conclusion of the contract, or goods of trust, where quality is random and difficult, if not impossible to assess (Friedrichsen/Grüblbauer/Haric, 2015, p. 8).

But the involvement of service users in the creation process is also problematic, since their satisfaction often depends heavily on interaction with the service provider (see "customer relationship" in Chapter 3.1 Business Model Canvas). Although the concept of Service Science and Economics of Platforms are listed as two separate subchapters within the theoretical part of this thesis, this in no way means that these two concepts cannot actually be combined. Services can be developed even faster if they are set up on a common service platform (Buhl/Heinrich/Henneberger/Krammer, 2008, p.61). When we talk about services or service science, this usually has to do with their involvement within the digital economy. Information technology plays a crucial role in many services today in that it is an "enabling tool" for the development of new services on the one hand and the basis and inseparable part of many services on the other (ibid., p.62).

In contrast to the business view of Service Science, the technological understanding of service is a "software-technically realized artifact for offering functionality" (ibid., p.62). This can have different characteristics such as: 1. Self-describing: meaning metadata can be used to describe certain aspects or functionalities of a service like its compatibilities etc., 2. Platform-independent: meaning that the service can be used regardless of the context of the underlying software or hardware platform, 3. Composition: meaning that services can be put together, like for example: comped webservices, 4. Use of standards: using standardized languages and protocols, 5. Loose coupling: should simplify the use through measures such as standardization and thus also enable the service to be linked to other services, 5. Location

transparency: meaning that the service can be found and accessed by registering in a directory regardless of the geographical location of the service provider (ibid.,p. 63).

Technology-oriented services can implement individual process functions - in addition to human task carriers, for example (ibid.,p. 64). One of the questions which arises from all the different considerations on Service Science from a technological as well as from an economic perspective, is, for example, whether the role of the kind of company which merely serves to coordinate services is an economically viable concept (Buhl/Heinrich/Henneberger/Krammer, 2008, p.65).

However, there are numerous opportunities in which the economy as well as the technology sector and all other research areas and disciplines involved can learn and benefit from Service Science. An important key to this is the SOA (service-oriented architecture) in which specifics underlying the understanding of services can be transferred to companies and their business processes. These companies are commonly referred to as SOEs or service-oriented enterprises (Hefley, 2008, p. 268).

Research into what Service Science can offer the company, also called service innovation, led to results like business model innovation at production companies such as IBM or Apple, which began to outsource all functions that did not represent core functions and examine the market according to demand and to expand their core functions and various other ways of implementing the concepts of service science into traditional business models (Huo/Hong, 2013, p.54). By identifying and using the advantages of Service Science, which are changing and reshaping on the entire economic and industrial environment, companies can not only offer service functions or products, "but also create new service markets by integrating the consumer requirements to build the leadership […] [within] their own industries" (ibid., p.54).

In order to understand more precisely how such changes are implemented with the help of the learnings from Service Science, we would like to take a closer look at IMB's example mentioned above: IBM streamlined the company to divest its entire hardware business, which had proved to be insufficiently profitable (ibid., 2013, p.55 f.). Instead, they outsourced computer manufacturing to a third party in Silicon Valley, sold their hard drive business to Hitachi and their remaining PC business to Lenovo (ibid., 2013, p.55 f.). The focus was shifted to IT consulting, software and other promising services, turning IBM into a de facto solution provider (ibid., 2013, p.56). This is a very vivid and interesting example in this context, since IBM is partly responsible for the establishment of Service Science in the academic world and further because the company has completely changed it business model from a pure production company to the service sector. Furthermore, IBM has developed a system for quantitative measurement of customer satisfaction that changes the organizational structure

in the direction of a network structure and flat hierarchies, all of which led to a 23% increase in total revenue. (ibid., 2013, p.57). Even during the financial crisis of 2008, IBM's software and service portfolio grew enabling the company to withstand the blow it dealt to its hardware sector (ibid., 2013, p.58).

However, service science should not be understood as the only and unique remedy for the development of new business models, even though companies and complete economies have both been "migrating towards services" (Vargo/Lusch [a] in Hefley, 2008, p.83).

It is simply one of many driving forces contributing to the development of new and potentially successful business models, such as information technology, globalization, Web 2.0 and so on (Huo/Hong, 2013, p.64). The trends and topics that Service Science reveals, however, such as personalization or adaptability of customer needs, product differentiation through service, shortening the cycle from innovation to implementation, and all other improvements in the customer-vendor relationship based on information technology, can help to build new business models, especially in the digital sector (ibid., 2013, p.64).

However, one of the main factors that makes Service Science usable in relation to business models is Service Dominant Logic. This represents a fundamentally different way of looking at services. In Goods Dominant Logic it is primarily a matter of looking at services in the sense of intangible goods where in contrast in Service Dominant Logic services are understood as a process of co-creation of mutual value (Vargo/Lusch [a] in Hefley, 2008, p.84 f.).

It is debatable whether the product-dominated approach to services (even in the case of intangible goods) still does justice to today's economic reality, since the production of "products" (or services) is always separated from the users/customers (ibid., p.84 f.). Especially in the service economy though, which, as already mentioned above, is steadily growing, as well as in Economics of Platforms, it is desired to involve the end customers more and more in the creation process by turning them into prosumers (ibid., p.84 f.).

In Service Dominant Logic "service is defined as the application of competences {skills and knowledge} for the benefit of another party {or for oneself}" (ibid., 2008, p.85). Here, services are no longer regarded purely as intangible or hard-to-describe goods, but as a process of mutual value creation for the benefit of all parties involved. This is particularly interesting in the area of intermediaries (see Economics of Platforms): Intermediaries connect the producer and consumer of a good and thus offer a service that simplifies the transaction described above. Service Dominant Logic does not regard the product as obsolete, but gives priority to the service or the process itself (ibid., 2008, p.85 f.).

Even if you omit the consideration of intermediaries completely and focus purely on suppliers and customers or producers and consumers, the source of the actual added value does not lie

in static resources or products, but in the exchange of knowledge and skills of both parties (ibid., p.85 f.). "Value creation as an interactive process" (ibid., 2008, p.86) therefore takes place exactly at the interface between supplier and customer, since the value is not bound to a static product or good. This in turn is yet again a strong argument for intermediaries, platforms and the like (see: Economics of Platforms). The fact that people work together for the common benefit of all parties involved does not sound like a truly economically relevant approach at first (ibid., p.87). However, as can be seen in chapter 2.2 "Economics of Platforms", there is also a theoretical basis for this concept underlying the Service Dominant Logic: the homo socialis (see 2.2.1).

However, in order for Service Science to really make sense for new emerging business models, it is necessary for it to adopt Service Dominant Logic rather than the traditional Goods Dominant Logic (Vargo/Lusch [a] in Hefley, 2008, p.87). The well-being of the individual, that of companies, as well as the social well-being are directly connected with each other, and this fundamental view is the core of both the homo socialis model (see 2.2.1) and the Service Dominant Logic (Vargo/Lusch [b] in Hefley, 2008, p.96).

2.2 Economics of Platforms

2.2.1 Homo Socialis as the theoretical basis of Platform Economics

Complexity of socio-economic systems increases, due to our technological implications like Web 2.0 and digitalization in general. This allows for more participatory markets that also see the end-customer much more integrated into the whole economic system as well as completely different business models (Helbing, 2013, p. 3). One of these new models of our time is based on platforms and examples like Amazon, Facebook, Twitter, and many more cases like those have shown great promise in that particular form (ibid., p. 29).

In order to establish and explain the term "Economics of Platforms" in the sense that it is to be understood in this study, it is necessary to take a quick look at how it differs or diverges from traditional microeconomic and macroeconomic theory.

Helbing argues that there is dire need for change within our economic system, since the principles of the "homo economicus" paradigm, where the self-regarding, optimizing behavior of the individual is still at the front and center of all microeconomic viewpoints and the camp-oriented thinking of Keynesianism and Neoliberalism has outlived its purpose (ibid., p. 3-7). Neither advocates of the one camp nor the other have been able to predict or adequately explain either of the financial crises in the 1920s or in 2007. Both approaches are too firmly

anchored in theories based on the assumption that individuals and actors in a society always (or at least mostly) behave in an idealized and model-like form (ibid., p. 8 f.).

Scholarly economics appear to be unsuitable, even for financial traders of today's world (ibid., p. 8 f.), however, there are many financially successful companies today that have already started to adapt towards a different kind of approach: that of participatory markets (ibid., p. 29 f.). The main concept behind the idea of participatory markets is the so-called "homo socialis", a well-defined and tested alternative theoretical model of an agent that considers not only the maximization his own benefit, but also the benefit of others (ibid., p. 5 f.). In the well-known example of the Prisoners Dilemma, "homo economicus" would neither deem cooperative behavior as rational nor beneficial for himself, resulting in the harm of any other involved agents (ibid., p. 10 f.). Homo socialis, however, "takes into account the perspective, interests, and success of others when taking own decisions" (ibid., p. 14), which means that this particular theoretical agent is interested in a beneficial outcome for all other agents as well as his own well-being.

This is where the principles of "economics 2.0" (ibid., p. 17 f.) and "bottom-up self-regulation" (ibid., p. 17 f.) come into play which, according to Helbing, can be understood as one of the basic underlying motivational principles of economics of platforms.

The concept of "prosuming", meaning that consumers also co-produce part of a product or service, and "Web 2.0", meaning the participation of users and thereby a generation of additional all-around benefits (Siepermann, n.d.), are as much at the foundation of Platform Economics as the concept of homo socialis, who in addition to competitive motivations also has cooperative ones" (Helbing, 2013, p. 18).

Based on those findings, companies with business models that are built upon the functionalities of the internet and use their users input as a part of their value creation process, are the kind of digital businesses like Amazon, Facebook etc. which a) have a platform character and b) "can generate considerable economic value" (ibid., p. 29).

Alphabet (Google) and Amazon are two of the four most valuable technology companies on the Fortune 500 list of 2018, which is put together by by Fortune Magazine (Murray, 2018). Platforms are at the heart of those companies' business models and the ways they generate revenue. Both Google and Amazon use "user-centric, multi-criteria reputation systems" (Helbing, 2013, p. 25), meaning they allow users to cope with the services, systems and platforms they provide – up to a certain extent – in a self-regulatory manner. Without going into too much detail on the specific business models of those particular companies, they illustrate how allowing their customers/users to consider the "interests and preferences of other[s] [users]" (ibid., p. 27) and communicate with each-other, they add value to whatever service or

15

product those companies provide. The customer/consumer/user thereby becomes part of the product or service that is being provided to other customers/consumers/users or even himself. In that matter everybody benefits from this type of collaboration.

Another example on how this principle is put to work within the field of digital technology is the concept of Open Source (Lackes, n.d.) or Open Data.

> "The 'open source ecosystem' is based on a number of ingredients such as 'viral' open source licenses, which ensure that those using open source code in their own software will also have to make it available to others. Therefore, software licenses (such as the GNU General Public License) reward other-regarding behavior as it characterizes the "homo socialis" (Helbing, 2013, p. 30).

The term "open source software" came to life in in 1998 with the foundation of the Open Source Initiative or in short OSI (Brügge et al., 2004, p.19 f.). Since then, the basic principles of open software, open data or open innovation have steadily gained attention, with many successful companies like Google or the Mozilla Corporation adapting these ideas fully or in part and incorporating them into their business models (Anders, 2016).

In the discussion about open source software development, four peculiarities are often highlighted: software licensing, non-commercial settings, high degree of collaboration, and the wide spatial distribution of developers (Brügge et al., 2004, p.19 f.). This again highlights that these collaboration aspects mentioned above are already at play in various successful business models. Obviously companies who incorporate ideas like these into their businesses, identify their customers/consumers or even a wider community of potential customers and consumers as part of their value chain.

One of the key reasons for that is that products and services (especially in the world of software) are no longer finished at the time of delivery and are handed over to the user as such, but are delivered in the sense of a perpetual beta in a quasi-unfinished, albeit functional state and then continuously extended and adapted by functions - sometimes even by integrating the user base (Karla, 2007, p.17). This makes perfect sense, since users know best how to evaluate each product or service in terms of their own individual benefit from it. By generating feedback loops with those users the product or service continually improves adding then again to both the benefit of the company providing and the users using it.

In this way, "open systems", i.e. systems that allow cooperation between users and providers, can also accelerate innovation (Helbing, 2013, p. 28).

This idea of simultaneously turning the consumer into a producer or at least a co-producer gave rise to the term "prosumer". The mutual benefit of the two agents makes both the prosumer and the company, which allows prosuming and actively promotes it, a model example of homo socialis (ibid., p. 28 f.).

Helbing argues that this organizational change of turning the digital economy into a series of quasi-projects (the term "project" highlighting their collaboration aspect) will likely gain much more traction in the near future and transform our society into a participatory market society (ibid., p. 30 f.)

This in turn means that an economic system or society which is based on the homo socialis paradigm also behaves more openly in the area of regulation. This does not mean a complete elimination of regulation, but on the contrary a multiplication of different individual contracts and licenses. In this case, bottom-up regulation allows providers and users to agree specially tailored contracts and licenses for different licenses, services, products and services.

On the one hand, this can lead to superior performance (ibid., p. 5 f.) in terms of overall organization, on the other hand, in a world of digital economics in particular, this means increasing complexity in the area of rights and license management. The trade-off therefore takes place between increasing benefits for providers and consumers and ever-growing complexity due to individual contracts. This increase in complexity should not only be understood in the context of Helbing's vision of a possible complete "participatory market society", but it is already taking place in today's time (ibid., p. 34). Dealing with growing complexity through decentralization in terms of self-regulation (ibid., p. 34), however, does not completely eradicate the problems associated with complexity.

The logical conclusion is that complex systems between supplier and consumer/prosumer in turn require their own supporting structures in the form of intermediaries, which simplify or even make possible the interactions between the individual agents.

In order to categorize these third agents or intermediaries we need to look at the general dimensions of digital business models and understand what forms they can take on.

2.2.2   The three dimensions of digital business models

One of the most valuable scientific papers in the context of analyzing different digital business models comes from Eric Brousseau and Thierry Penard and offers an outlay or "framework for comparing different business models for producing information goods and digital services" (Brousseau/Penard, 2007, p. 81).

In order to understand what the term "platform" actually means and to what extent an individual kind of economics can be derived from it, it is necessary to provide an introductory explanation.

As well as the company Uber which is meanwhile the world's largest taxi company that has no vehicles, Facebook as one of the world's largest media companies does not generate its own content, and Alibaba, as the largest online retailer besides Amazon does not keep its own

inventory platforms change the way supply and demand are handled and thereby create a need for understanding how the digital economy works in contrast to the traditional physical exchange of goods and services (McAfee/Brynjolfsson, 2017, p 4.) All of the above mentioned companies are economically very successful and all of them are platforms. But what are platforms?

According to the Gabler Business Encyclopedia (Gabler Wirtschaftslexikon), the business model of a platform enables the interaction of two or more independent groups. The value for a single group derives from the presence of another group, meaning that platforms are strongly dependent on network effects (Grösser, n.d.). Platforms, however, can also show a service character, resulting in the term "PaaS" or Platform as a Service. This means a "demand-oriented provision of platform IT resources which enable the operation of applications developed by customers themselves. In this context, platform IT resources often offer application functionality that customers can reuse in their applications" (Leymann, n.d.). However, this is part of a completely different theoretical complex and is not dealt with in detail in this paper due to the already high degree of complexity of the theoretical framework.

A much shorter definition is given by McAfee and Brynjolfsson: "A platform can be defined as a digital environment characterized by near-zero marginal cost of access, reproduction, and distribution" (McAfee & Brynjolfsson, 2017). Building a platform is basically "assembling components, then bundling them into packages that correspond to consumers' complex and specific needs" (Brousseau/Penard, 2007, p.82) which lies at the heart of successful businesses like Amazon, Google and many others like them.

The following chapter will try and highlight the different dimensions of digital business models in general and thereby clarify in depth how this pertains to economics of platforms.
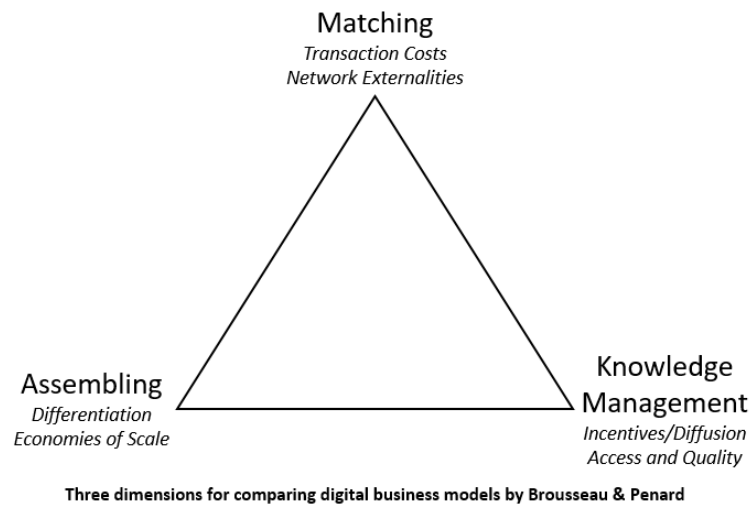
Brousseau's & Penard's framework divides the basic economic principles amongst digital business models into three dimensions: the economics of matching, the economics of assembling and the economics of knowledge management (ibid., p. 81). In order to put these three terms into an understandable context and at the same time offer a tool for analyzing any and all digital business models following their understanding and classification of them, they have developed a triangle graphic upon which those business models can be mapped. This triangular graphic is the key to the discussion of the competitor analysis in chapter 5, since it offers a normative way of categorizing the findings of the analysis in chapter 5.

Before getting into the dimensions of matching, assembling or knowledge management, it is important to understand that the whole concept of these three sits atop the following assumption or theory: the birth of the Internet made it possible for information goods and services to be exchanged which all exhibit particular properties like high fixed costs, variable

costs, and network externalities (ibid., p. 81). By changing the relationship between supply and demand, the digital economy effectively "changes the game", resulting in new kinds of business models (ibid., p. 82). However this does not necessarily mean, that digital technologies, and their properties described above, result in elimination of individual stages of the traditional value chain, but rather that new kinds of intermediaries and thereby businesses emerge from the developments (ibid., 2007, p. 82).

In general, the specific characteristics of supply and demand in digital business models can be described as follows: 1. Digital goods and services are modular, which means that their basic components or functions can be adapted based on customer needs. For this reason, these usually also consist of "packages", i.e. basic functions that can subsequently be adapted or tailored to individual needs (ibid., 2007, p. 83).

2. Digital modules or functions are related to the production of material goods and/or information services, these modules are only valuable in connection with each other and the use of these modules or functions generates value per se or through enabling users to generate something new and/or valuable (ibid., p. 84). 3. Users are not neutral in the value creation process, but can take over functions of the services they use themselves and generate knowledge either actively or unintentionally. (ibid., 2007, p.84 f.) This is important because it closes the circle to the prosumer described in the previous chapter (2.2.1), i.e. the consumer who (possibly at the same time) is also the producer. Since for Brousseau and Penard this observation is fundamentally connected with "digital or modular activities" (ibid., p.83 f.), the cooperative behavior of the homo socialis described above can in turn be regarded as a fundamental economic necessity within digital business models (comp. 2.2.1).

Matching
Transaction Costs
Network Externalities

Assembling
Differentiation
Economies of Scale

Knowledge
Management
Incentives/Diffusion
Access and Quality

Three dimensions for comparing digital business models by Brousseau & Penard

Fig. 2: Three dimensions for comparing digital business models- own graphic based on Brousseau& Penard (Brousseau/Penard, 2007, p.87)

The figure above, designed by Brousseau and Penard, is meant to be understood in the following way: At each corner there are the "pure business models: either pure matching {for example, dating services} or pure knowledge management {for example, on-line epistemic communities} or pure assembling {for example, a telecommunications access provider}" (ibid., p.88). The triangle's surface is meant to correspond to possible combinations of those three, however Brousseau and Penard view the dimensions "matching", "assembling" and "knowledge management" to be independent of each-other. Centralizing or decentralizing each of the three within one business model ensues in trade-offs, which then result in alternative digital business models, meaning they are not purely concerned with just matching, assembling or knowledge management.

A typical pure matching service would be any form of a dating application or service, a pure knowledge management service would be something like Wikipedia or any other wiki-platform, and a pure assembling service would be something like a web service provider.

Travel agencies, for example, could be understood as the perfect mix of those three dimensions, since via matching they allow their clients to find people or institutions who offer them accommodation, via knowledge management they allow clients to rank said forms of accommodation, and via assembling they can offer clients a combination of all kinds of services like car rental services, reservation of flight seats or accommodation, organization of trips etc. (ibid., p.88).

2.2.2.1 Matching

Concerning the aspect of **matching** and what it has to do with transaction costs and network externalities (or network effects), it is necessary to take a deeper look into its key activities. The main activities of a business in the field of matching are to bring the creators of services or functionalities and their users together and to ensure the performance of these transactions (Brousseau/Penard, 2007, p.88). Since it is a two-sided market, meaning "there are two groups of agents {the market sides} that use an intermediary service {the platform} to interact […] the benefit of each Side 1 agent depends on the number of Side 2 agents and vice versa" (Böhme/Müller, 2012, p.454).

> "A multi-sided platform grows in value to the extent that it attracts more users, a phenomenon known as the network effect" (Osterwalder/Pigneur/Clark, 2010, p. 77).

As such, these are often intermediaries who can use indirect network effects to their benefit and "implement discriminatory pricing strategies [in order] to maximize […] [their] surplus" (Brousseau/Penard, 2007, p.90), however, managing those network effects is even more efficient "in the presence of a platform" (Brousseau/Penard, 2007, p.90) since it enables the intermediary to internalize supply and demand.

If we are talking about platforms providing these matching services, each platform provider should be highly interested in encouraging single-homing, meaning that in order for both agents to interact they have no option of using any other platform (Böhme/Müller, 2012, p.454). A situation, however, where only one side of the market or one of the agents interacting with each-other through an intermediary is restricted to single-homing (meaning the agent cannot go through any different intermediary) is called a "competitive bottleneck" (Armstrong 2006 in Böhme/Müller, 2012, p.455).

This can be observed above all with large and economically successful platforms such as Google or Amazon. Here the network effects can be observed, which therefore also have a direct negative effect on potential competitors. Simply put, because a large number of users prefer to use matching platforms, such as Amazon or Google, it is worthwhile for other potential users to use them as well instead of using competing products or services. This in turn makes it extremely difficult for new competitors to enter the market (Osterwalder/Pigneur/Clark, 2010, p. 80).

The described externalities between agents or the intermediary and agents on both sides can best be explained via a simple example: if an intermediary offers information "on the quality of transacted goods [...] [this can lead to the improvement of] complementary services […] [like] logistics for replacing/repairing damaged goods" (Brousseau/Penard, 2007, p.90). This means

that continuous flow of information between the two market sides and the intermediaries in the form of some kind of implemented feedback loop can by itself lead to better outcomes for all parties involved. Another peculiarity which occurs particularly on matching platforms is the cross-subsidization, i.e. the integration of participants who are less willing to pay with the help of revenues generated on the other side of the "two-way market". This increases the number of users, which in turn can generate network effects that lead to greater added value for all agents and more difficult market entry for potential competitors (ibid., p.90).

However, the ability to shape the market in this form through pricing or price discrimination can work in two directions. In an environment of several competing platforms in the field of matching, it can happen that they have to undercut each other in the area of entry costs for customers. This is one of the trade-offs of matching platforms (ibid., p.91).

However, a distinction must be made between so-called integrated matching platforms, i.e. those that actually hold the rights to the brokered services or goods, or those that act purely as intermediaries. For the former, high quality of the brokered goods or services will automatically be in the interest of the platform provider; for the latter, other competing platforms must be available (ibid., 2007, p.91.f). However, these considerations also apply very generally to the differentiation between monopolistic markets or those with two or more providers.

Nevertheless it is very hard if not almost impossible to truly build a monopoly as a provider of intermediary services, since the very basic structure of the digital network all digital businesses operate in holds the possibility of bypassing any and all intermediaries "even in cases where there are no direct competitors to the existing platforms" (ibid., p.92).

2.2.2.2   Assembling

Platforms can also provide **assembling services**. Brousseau and Penard, due to the "evolution of competition in the Internet industries" (ibid., p.96 f.), generally distinguish between two different kinds of assemblers, who are in fact competing with each other: "access assemblers [and] media assemblers" (ibid., p.97). In a time of convergence of business models, especially within the field of media, it is unclear how long it will be necessary to actually make that distinction, since those two models are likely to become one (ibid., p.97).

Anyone from a television channel like the BBC to a computer hardware manufacturer like Apple (even though they also produce compatible software) basically falls under the category of assembling. The costs in this particular form of digital business are derived from transaction and technical costs, the former due to the assembler having to deal with producers of parts or functionalities and the end-users and the latter due to the assembler having to actually produce or make the components it provides (ibid., p.92 f.). Most assemblers today apply mass customization to their business model, which means that they are trying to deal with "the need

for more diversified and customized goods and services […] [due to] increased living standards" (Brousseau/Penard, 2007, p.93) within developed countries. However, customization is not only a phenomenon that is present simply due to increased living standards within modern, industrialized countries, but also a key aspect of the "development, distribution and implementation of IT" (Brousseau/Penard, 2007, p.93), meaning that the very reason for (mass) customization derives from wealth yet also from the very structure the digital economy is based on. This means that before the digital economy it was simply not possible for producers or sellers to learn as much about the preferences of their (potential) customers (potentially even in real time) and then tailor their products and services to exactly those (ibid., p.93). Being able to react to customers' preferences as described is, however, also a matter of costs regarding to production and assembling.

One of the most interesting resemblances is that assemblers, just like matching platforms, try to bundle and aggregate as many information goods as possible in order to discriminate prices, make it more difficult for potential competitors to enter the market, and in result attain as much market dominance as possible (ibid., p.93).

However, one of the characteristics of digital markets and especially markets that deal with all kinds of information goods is the high first copy and assembling costs paired with the low reproduction costs. This is exactly the area where assemblers are able take advantage of economies of scale and scope and through bundling skim off consumer surplus (ibid., p.93 f.). However, if there are still intermediaries such as providers of matching in place who are necessary for effectively linking both the assembler and the end-consumer, this might lead to inefficiencies due to increased pricing (ibid., p.94).

Generally Brousseau and Penard distinguish between two types of assemblers: those who provide "a wide set of modules" (ibid., p.94) and those who target a smaller audience due to specialization. This is where the strategy of differentiation comes into effect, which does prove to be an effective and proven one in the field of assembling.

When it comes to whether assemblers should join platforms, i.e. either maintain their own platforms (in the sense of intermediaries that deal with matching) or join already existing ones, it can be assumed that only those who remain independent actually benefit from the value of the intermediaries - since joining or working as their own intermediary would only lead to additional costs but not necessarily benefits (ibid., p.94). However, this does not mean that the only profitable business model is in the intermediaries' field.

What makes assemblers special now is that most successful representatives among them all had a few core functions at the beginning around which they developed or built additional functions step by step. The difficulty, however, is that all these additional functions must be interoperable with each other.

According to Brousseau and Penard, assemblers have two options: either they adhere to universal standards and provide a wide range of functions, which are usually poorly integrated into the overall system, or they create their own proprietary standards and thus provide a highly integrated range of functions (Brousseau/Penard, 2007, p.95).

An excellent example in this context is the product range of Apple and Samsung when compared with each other. The latter company pursues the former strategy of providing the broadest possible portfolio based on universal standards and the former company relies on highly integrated and interoperable proprietary standards which are developed in-house.

There is however yet another strategy that is probably best understood within the example of an assembling platform: the strategy of valorization which aims to extract value from its users. This is either implemented in such a way that users pay purely for the actual use or the actual times of use, or the provision is free or to a certain extent free. In the latter case, you must first pay for extended services or frequent use (freemium). Free does not mean in this case, however, that it actually costs users nothing, they pay either by marketing their personal data or by the value they have for advertisers, i.e. by providing them with (mostly personalized) advertising (ibid., p.95 f.). These platforms are therefore faced with offering either "free provision of 'polluted' packages […] [or] the priced provision of value-added packages" (ibid., p.96).

In terms of generating revenue these assumptions hold true for business models of all three dimensions, since choosing a revenue model on the basis of paywall, free, freemium, advertising etc. is one of the core complications within all digital businesses.

Convergence within the field of digital business model has, however, led to an industry where differentiation between different models and demarcation between platforms dealing with either assembling, knowledge management or matching has become very complicated if not completely impossible (ibid., p.96 f.).

2.2.2.3   Knowledge Management

In the following subchapter, the dimension of Knowledge Management will be discussed in more detail, but also the processes regarding motivation and gratification with regard to software development that can be graphically depicted on the basis of this dimension will be presented. The motivation and gratification factor is also important for the other two dimensions, such as matching and assembling, since it explains to what extent business models which provide products and services seemingly free of charge still pursue a long-term strategy by doing so (ibid., p.102).

Knowledge Management or the "systematic accumulation of knowledge enabled by IT" (ibid., p.97) is not something that is simply done for its own sake, as one can imagine, however consumers in industrialized nations do take the Internet and its "access to information and knowledge […] for granted" (Richter, 2014).

The basis of all digital business models is "to systematically manage the information and knowledge that can be produced and extracted from the users of the digital goods and services" (Brousseau/Penard, 2007, p.97). As a result, every digital business model has a share in this very area. Any extraction of consumer and user knowledge, as is also done in matching or assembling, in order to better adapt to the individual preferences of customers, is in principle and at its core knowledge management (ibid., p.98). As previously explained in chapter 2.2.2.2 in the section "Assembling", the strategy of valorization, for example, is aimed at generating the value almost mainly through the contributions of users (see 2.2.2.2 Assembling). The same applies to the area of Open Source Software, where a significant proportion of the added value is attributable to community participation (Brousseau/Penard, 2007, p. 98). This does not mean that the entire business model is outsourced unto the community, but the interaction of technology and community is the key to its success (ibid., p. 98).

Digital technologies make it possible to "collect, sort, store and retrieve information" (ibid., p. 98) at comparatively low cost, which in turn leads to the necessary standardization and rules to make an "immense repository" (ibid., p. 98) of knowledge also accessible to users and thus create value for them. The development of uniform standards creates the basic prerequisites for all business models in the knowledge management sector. As already explained in chapter 2.2.2 above, network effects can only work and benefit everyone if many users "play by the same rules". However, if the system is fundamentally dependent on the extent to which individual users participate in it, it makes sense to evaluate what incentives can be created to make them contribute. The way and intensity of participation depends largely on the type of community "and the type of information [to be] exchanged" (ibid., p. 99). In order to efficiently and effectively organize information exchange, Brousseau and Penard define three key roles or aspects: the coordinator a neutral "group of individuals, an organization or a single individual" (Brousseau/Penard, 2007, p. 99 f.) who "organize[s these] information exchanges […] guarantee[s] their quality and […] privacy" (ibid., p. 100). The second aspect is "the organization of the circulation of information and contribution to the shared corpus of knowledge" (ibid., p. 100) defining whether an information exchange system is either open (everybody can contribute) or closed (only members of the community can contribute within the boundaries of the individual rights that are attributed to them). Open systems are in favour of a dynamic and broad exchange of information (ibid., p. 100). Due to their openness,

however, they are also susceptible to qualitative risks and lack the hierarchical structures to avoid these risks (Brousseau/Penard, 2007, p. 100). Closed and controlled systems can ensure the quality of contributions, but they also have significant disadvantages (ibid., p. 100). Since not all contributions are taken into account, this can also slow down innovation, as valuable contributions may be lost through selection (ibid., p. 100). Closed systems also have higher organizing costs to ensure constant control and filtering of content and are susceptible to the so-called "principal-agent" problem (ibid., p. 100). This means that discrepancies can arise between the generated knowledge of the community and the permitted contributions of coordinators (ibid., p. 100). The third aspect concerns the division of labor within the community and thus also questions of possible redundancies within the contributions (ibid., p. 100 f.). If the task is defined ex ante, this reduces possible redundancies and at the same time reduces the assembling costs (ibid., p. 100 f.). This can also prevent innovation and lead to principal-agent problems. However, the way in which tasks are shared varies from company to company (ibid., p. 100 f.). When dealing with incentives to contribute within the field of knowledge management, or in particular open source or open software development, then there is a variety of different approaches. Developers or those who contribute can be rewarded by patrons who are "interested in developing open and free software" (ibid., p. 101), but they can also develop them on their own initiative, for example to open up future job opportunities, or to gain recognition within their community. The latter intrinsic motivational reasons are those that can be identified as the strongest motivators within the open source community (ibid., p. 101).

It should be noted that these observations can be directly applied to the creation of content within communities concerned with building knowledge repositories. Why the factor of motivation or incentives is so important here, is because agents still participate in the development of such structures even "in the absence of [ordinary] market mechanisms" (ibid., p.101 f.), meaning without any reimbursement of expenses through money. Nevertheless, it is usually the case that the higher the effort and the associated quality of the respective contribution, the more likely it is that the contributors will be compensated for their efforts in some (usually monetary) form (ibid., p.102). However, as already described above, intrinsic motivations can sometimes be sufficient compensation - in many cases through the "recognition of authorship" (ibid., p.102) of a contribution. This insight can then be transferred directly to DALICC's business area, which deals with issues of license clarification. There are nowadays numerous licenses (especially in the software sector) which in some cases contain only a mention of the authors of a certain work in the form of remuneration (even if the license itself should regulate numerous other areas such as remarketing etc.). Such works or contributions, in which direct monetary remuneration does not take place, can also pursue long-term strategic goals as a driving force. This can be observed especially in the so-called copyleft models (ibid., p.102).

In a world where there is competition between technologies and standards, between ideas and values, it may prove worthwhile for a contributor to release their information and knowledge for free and even to subsidize its adoption and absorption, especially since fringe benefits can be expected from this distribution (Brousseau/Penard, 2007, p.102).

This explains in an excellent way why companies like Google, for example, have pursued a long-term strategy with the Android OS to make their works/modules available free of charge for further use. This strategy has ensured that their technologies have prevailed - in the specific case of Google Android - to such an extent that their operating system represents the largest market share in the mobile sector (Statista, 2018). In this way, network effects can be generated, as already described above.

Digital technologies make it possible to contribute not only to incentives but also to punish infringements in this sector. This is where digital rights management comes in (Brousseau/Penard, 2007, p. 102 f.). Brousseau and Penard argue, however, for an "institutional framework" (ibid., p. 102) in which topics such as remuneration, legal punishment, participation etc. can be regulated and enforced. However, since such a framework is difficult to implement, coordination platforms are needed to deal with such regulatory issues in order to generate desirable outcomes for all agents (ibid., p. 103). Another factor leading to the democratization of this market and to securing "fairness and efficiency" (ibid., p.103) is sufficient competition between platforms in the field of knowledge management or knowledge sharing. Strong competition is also evident in the end user markets, despite large and dominant companies, as the switching costs for users are comparatively low (ibid., p.103). With regard to the central trade-offs in the area of knowledge management, a distinction must first of all be made between two possible forms of organization: the former is hierarchical and organized in terms of knowledge creation, which, as already mentioned above, reduces quality risks but possibly inhibits innovation (ibid., p 103 f.). The second form of organization is unorganized and non-hierarchical, which can lead to collective innovation, but also entails a high degree of redundancy and the risk of reduced quality (ibid., p 103 f.).

There are also two completely different approaches to legal protection and design of business models in this area: legally open or closed (ibid., p.104). This is where licenses come into play: these are explicit authorizations and obligations associated with an asset eligible for protection under copyright or competition law (Pellegrini, 2017, p.2). They regulate access to, use and transactions on digital assets (Pellegrini, 2017, p.2).These range from public domain (no reserve of rights) to proprietary (all rights reserved). These are enforceable due to the cost-efficient possibilities that arise on the basis of these works or contributions exiting in the digital world: namely to check and track them with the help of embedded codes with regard to authorship, legal protection, etc. (Brousseau/Penard, 2007, p.104). The aspect of legal

protection pertains to all three dimensions of digital business models, whether it would be assembling, matching or knowledge management.

In the field of knowledge management, however, the need to protect digital works arises most of all because information leaks can "ruin the market value or the original information and knowledge" (ibid., p.104).

Fig. 3 License Spectrum -own graphic based on Pellegrini, 2017 (Pellegrini 2017, p.2)

As already highlighted above, even relatively open systems still find and implement ways to regulate how their works and processes are handled. This also applies to open source licenses. Just because a system calls itself "open" or a work is protected by such an "open" license does not mean that it does not impose any restrictions on users (Brousseau/Penard, 2007, p.105).

2.2.2.4 Possible combinations and instructions for use of Brousseau's & Penard's triangle

As stated above "a digital business model is a combination of the three roles played by platforms" (ibid., p.105). The platforms themselves, however, can be found dealing with just one aspect of the three dimensions, meaning they can also purely focus on assembling, for example, without ever having anything to do with knowledge management.

> "The platform can be a pure market intermediary {like a dating service or market place}, a pure assembler {like a Telco or on-line media}, a pure knowledge manager {like the Wikipedia community}, or can choose to combine two {like eBay, Google, or Yahoo!} or three of these roles {like online travel agencies or Amazon}" (Brousseau/Penard, 2007, p.105).

In order to analyze the platform, it must be placed within Brousseau's and Penard's triangle figure and then be positioned and moved along the two axes in the corresponding field (see fig. 4) showing the different trade-offs (ibid., p.106). However, this is not necessarily practical for creating and defining a business model. The simpler tool for comparing digital business models offers with certainty Figure 2, the "three dimensions of digital business models to compare" according to Brousseau and Penard.

There is no best model for any kind of platform, since they all have to live with certain compromises or trade-offs like the level and form of costs, potential competition, the level of potential innovation and legal security etc. (ibid., p.107).

The interesting link between the homo socialis paradigm and the economics of platforms can best be illustrated by the fact that Brousseau and Penard also attest platforms perpetual competition on the basis of which "users and function producer[s] {whose roles may partially overlap} [are prevented from] behaving too opportunistically" (ibid., p.107) and that in turn generates strong incentives of a satisfactory outcome of both parties.

Brousseau's and Penard's three dimensions however, are not only a vital tool for analyzing and describing digital business models, but also traditional non-digital ones. (ibid., p.82).
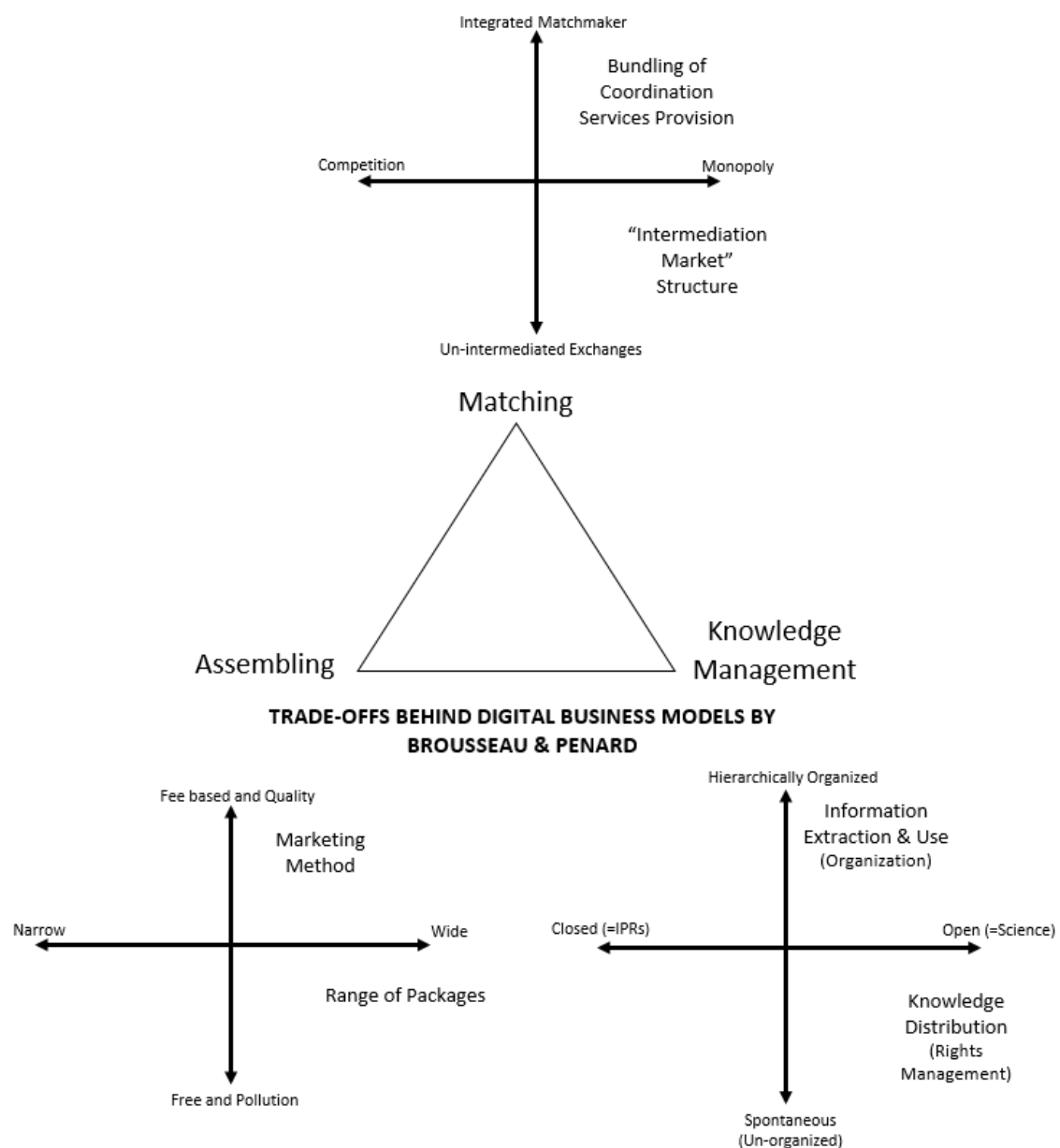
Fig. 4 Trade-offs behind digital business models-own graphic based on Brousseau& Penard (Brousseau/Penard, 2007, p.106)

Interesting in the context of the economics of platforms is the different use of the term intermediary. Brousseau and Penard use it mainly in connection with matching. Deloitte, on the other hand, sees all companies that indirectly benefit from open data as enablers serving intermediaries (Deloitte, 2012, p.4). These include "data management and storage companies, platform and software providers, crowdsourcing hosts [and] advisory systems" (ibid., p.4). This different approach of Deloitte in contrast to Brousseau and Penard will once again become important for the classification of DALICC's business model in the further course of this thesis.

3 Methodical Approach

In this chapter the processes of research and analysis are explained in more detail, as well as the procedure for developing the individual scenario models along the lines of the business model canvas.

3.1 Business Model Canvas

"The Business Model Canvas [is] a tool for describing, analyzing, and designing business models" (Osterwalder/Pigneur/Clark, 2010, p. 8) and in this study it therefore serves to examine DALICC's immediate business environment with the help of a previous competitive analysis and to derive possible recommendations for its organizational design. Originally developed for startups, the Business Model Canvas offers a guideline how to develop a business idea into a functioning business model (Lukas in Grote/Goyk et al.,2018, p. 146).

It is meant to help the user to recognize connections in the business model in a clear, graphic way and to work out strengths and weaknesses. The business model under consideration is subdivided into nine individual components and meant to be followed in a step by step fashion (ibid. p. 146 f.). At the center of the graphic is the field of value proposition which describes the products or services a company offers and highlights the special additional benefits it offers to the customers.

Everything left of that central field is meant to analyze and describe what is necessary to produce said value proposition (like key activities, key resources, key partners, cost structure) and therefore represents an internal view of the business model (ibid. p. 147). On the right of it all factors are designed as a view on the external view or market view of the company/business (ibid. p. 147). Lukas compares these two views to the backstage (internal) and frontstage (external) of a theater.

When it comes to using the Business Model Canvas as intended, one simply needs to fill the nine different fields with relevant content. Relevant in that matter means that it can either be obtained via rigorous research or via "common sense" and "decided from the gut" (ibid. p. 147). This means that there is generally no right or wrong way to go about it and it should furthermore be tailored to the individual requirements of the user (ibid. p. 147). In the case of DALICC, this means taking into account the particular market structures of two-sided markets and the particularities of digital economies, as well as the conclusions drawn from the economics of platforms and service sciences.

Business Model Canvas (after Osterwalder, Pigneur & Clark, 2010)

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure			Revenue Streams	
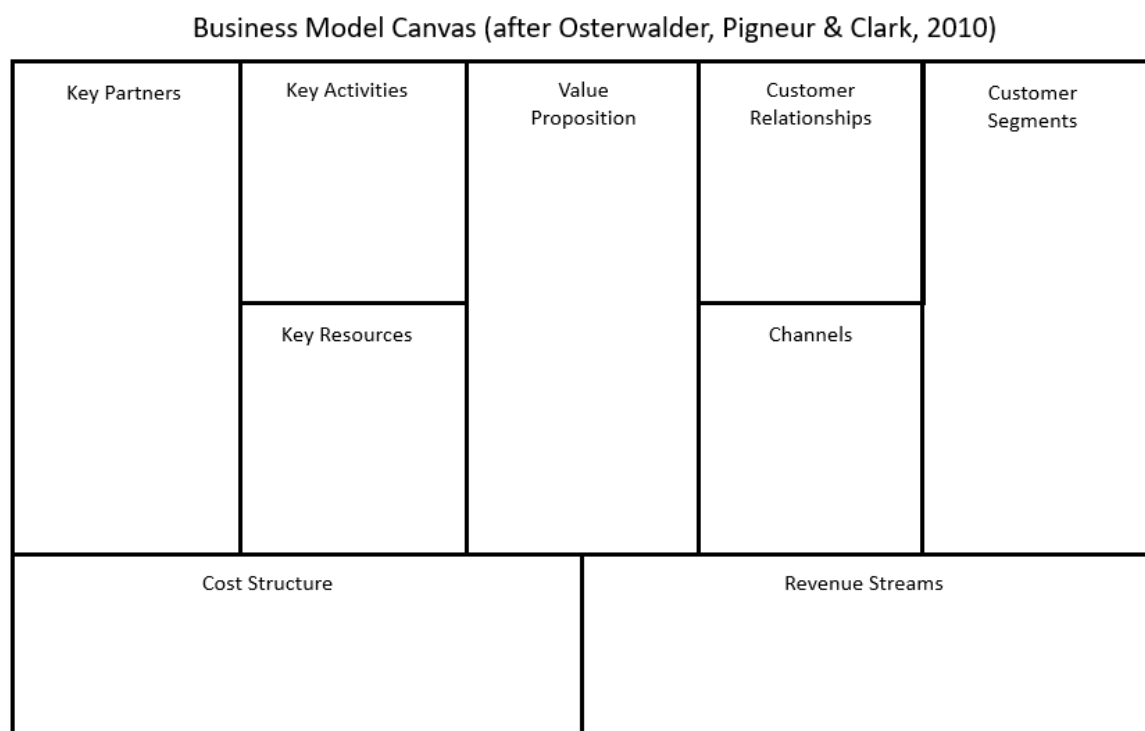
Fig. 5 Business Model Canvas-own graphic based on Osterwalder/Pigneur/Clark (Osterwalder/Pigneur/Clark, 2010, p. 44)

At this point, the individual nine segments of the Osterwalder and Pigneur business model canvas are described apart from the rough division into external and internal factors:

1. Customer Segments: They represent the lifeblood of every business model. They can be divided into special segments according to needs, behaviors or other attributes. Either there are several small or one large segment/group (Osterwalder/Pigneur/Clark, 2010, p. 20). However, it also records which customer groups are targeted and which are left out of the picture. Once all these segments have been defined, some of the customer needs have already been identified (ibid., p. 20).

2. Value Proposition(s): the value proposition is something that addresses and satisfies a specific need of customers (ibid., p. 22). It consists of a selected number of products

and/or services that meet the aforementioned needs of a specific customer group (ibid., p. 22). The value proposition is also the reason why the customer does not choose the offer of the competition (ibid., p. 22).

3. Channels: this module describes how a company reaches its customer segments or customer groups to attach its value proposition (ibid., p. 26). This includes all areas of "communication, distribution and sales"(ibid., p. 26). The channels are the area where the customer contacts the product/service or the company (ibid., p. 26). They help customers to compare the company's value proposition with their own needs and, if affirmed, to obtain them in the form of products/services (ibid., p. 26). After sales support also falls within the scope of the channels (ibid., p. 26).

4. Customer Relationships: this area relates to the different customer groups or customer segments (ibid. p. 28). It also defines what type of relationship exists with each individual customer segment: "personal or automatic" (ibid. p. 28). This applies to all areas such as customer acquisition, customer retention, or sales growth (ibid. p. 28). Customer experience is also directly linked to the customer relationship(s) (ibid. p. 28).

5. Revenue Streams: this represents the money flowing directly from each customer segment to the company (ibid. p. 30). Osterwalder and Pigneur write: „If customers comprise the heart of a business model, Revenue Streams are its arteries "(ibid. p. 30). Defines the value of the services or products offered in terms of monetary value and identifies and determines pricing mechanisms (ibid. p. 30). Here the value of the offered services or products in terms of monetary value is determined and pricing mechanisms are defined (ibid. p. 30).

6. Key Resources: the most important resources of a company or even the key resources enable it to create a value proposition at all, to reach (possibly) various markets, to maintain relationships with customers and customer groups and to generate revenues (ibid. p. 34). However, these vary from company to company because they can be of a human, financial, physical or intellectual nature (ibid. p. 34). Topics such as outsourcing or the use of strategic partners can also be a key resource (ibid. p. 34).

7. Key Activities: these are the most important things a company has to implement to succeed or to succeed its business model (ibid. p. 36). These also vary with the nature of the company and its field of activity (ibid. p. 36).

8. Key Partnerships: the entire network of strategic partners, suppliers and all suppliers that make the business model possible is captured here (ibid. p. 38).

9. Cost structure: all costs incurred in connection with the business model are recorded here. After all the aforementioned points have been recorded and defined, an overall cost structure can be estimated (ibid. p. 40).

3.2 Scenario planning

The first approaches for scenario planning can be found in Carl von Clausewitz' work "Vom Kriege", a book on wartime and military strategy. Many of its rules have been transferred to today's corporate world and the way how companies operate and strategize (Reibnitz, 1992, p. 11). The goal is always the superiority and triumph over one's enemies, whether that would be in a military or corporate perspective, in a corporate world, however, this is expressed through a strong market position, a potential strategy of expansion of the customer groups, product and service offer (ibid., p. 11). One of these many techniques that have derived from military purposes but have now been transferred over into the world of business is scenario planning. The scenario method is understood as a planning technique that usually consists of two or more very different possible ways a future situation might develop according to a number of factors specified within each scenario (ibid., p. 14). Company-specific scenarios are the tailor-made for each company's initial situation and influencing factors from the corporate environment are viewed from the point of view of the company itself. This means that all external factors having a direct or indirect impact are related to the company and do not contain any factors that are not relevant to the company (ibid., p. 15).

The scenario method is best described by using the so-called "scenario funnel". This means that the present situation and present point of view is on the narrowest point of the funnel representing relative certainty. The further one tries to see or predict situations in the future, the higher or "wider" the level of uncertainty and complexity becomes and the more possible outcomes one faces (ibid., p. 26). Some successful companies like the Shell Corporation only use two possible future scenarios, whereas others use two alternative scenarios and a third, so-called trend scenario (ibid., p. 28).

The scenario analysis usually includes the following eight steps (ibid., p. 30):

1. Task analysis (target strategies, strengths and weaknesses)
2. Influence analysis (areas of influence, influencing factors, networks)
3. Trend projections (clear projections, alternative projections)
4. Alternative bundling (consistency assessment)
5. Scenario interpretation (networked scenario developments)
6. Consequence analysis (opportunity risks, activities)
7. Disruptive event analysis (impact analysis, preventive measures, reactive measures)
8. Scenario transfer (main strategy, alternative strategy, environment monitoring system)

In this thesis, however, these eight steps are shortened and adapted to the special requirements to be brought into line with the business model Canvas, as it is intended to create the strategic outlook for DALICC. Therefore, the scenario analysis is only carried out on the

basis of the findings from the business model Canvas in combination with a SWOT analysis. By combining these two methodologies, several possible future scenarios for DALICC can be derived. Another factor why scenario analysis in its original eight-step form would not make sense for DALICC is that it is a company that first has to be founded and the structures that require a complete scenario analysis do not yet exist in sufficient form, but are only to be created with the help of this thesis. Since DALICC is exactly such a start-up for which the business model Canvas was created its main activity, in contrast to already existing and established companies, lies in the development and less in the management of a company (Lukas in Grote/Goyk et al.,2018, p. 155). In a complex and volatile environment of rapidly changing markets caused by digital transformation, an unusual and complex combination of analysis tools is required (ibid., p. 158). This combination of both the Business Model Canvas as well as scenario planning is not an entirely new method, however. Both models of analyzation have been described by Osterwalder et al. in a combined fashion (Osterwalder/Pigneur/Clark, 2010, p. 180 f. Osterwalder et al. recommend using "between two to four different scenarios based on two or more criteria […] each scenario […] titled and described with a short, specific narrative outlining the main elements " (ibid., p. 189).

3.3 Data acquisition and analysis

3.3.1 Data acquisition

The author chose a qualitative approach to work out the basics of each competitor based on their service portfolio, form of value creation and revenue model in order to compare them to each other. Thus information was collected from the competitor's websites and if possible or necessary complemented with additional information found on the internet. Since in a competitor analysis information is scarce, even websites that would otherwise not be regarded of scientific value, like Wikipedia, were taken into account.

For pages whose truth cannot be verified, however, the additional information gained by these pages had to be seen as an enrichment of the competition analysis. In the development of the business model for DALICC, all of them provide a better overview of the license clearing market, however seemingly insignificant the information about potential competitors.

Within the scope of the Internet search, terms such as "licensing", "license clearance", "licenses clearance" "automated license clearance", "license clearance platform", "license clearance machine", and "license clearance service" were searched via the Google Search Engine. These terms were also translated into German and searched via Google Search Engine.

For the purpose of cataloging the research, an overview of the various potential competitors was created using lists in Microsoft Excel. This list contained the following sub-items for cataloguing: number, company, link to the website, number of employees, legal form, headquarters, possible branches, service portfolio in keywords, service area, possible supporting organization or parent company, revenue model and value creation in key words. This list was previously only a guide for the author to keep track of potential competitors. The online research and discussions with the DALICC team resulted in a total of 7 possible competitors.

3.3.2 Analysis

The analysis of the previously identified potential competitors consisted of comparing them on the basis of their service portfolio, their type of value creation and their revenue model.

The following problems emerged: potential competitors had different views of license clearance in their business models. This meant that in the course of the research, the view and the categorization of competitors had to be changed again. Some competitors had specialized more in personal consulting in licensing and for others, licensing meant optimizing software licenses or software license management within companies that use software as an operational tool.

As a result of the research, many of the parameters cataloged in the Excel list could not be used for further analysis and comparison of the business models and therefore had to be discarded. However, Brousseau's and Penard's three dimensions for analyzing digital business models, found in chapter 2.2.2 of the study's theoretical framework, proved to be particularly helpful in this context for comparing the business models of actually very different competitors in a normative manner (and therefore very useful for the development of DALICC's business model).

Irrespective of the fact that the analysis had to be adapted to the research findings, the findings and principles from the theoretical part in particular provided a valuable guideline for DALICC's business model development. As already read in chapter 2.2 Economics of Platforms, the possibilities of digital business models often consist in finding the right niche in which there is still hardly any competition or in which one's own company is particularly good (Brousseau/Penard, 2007, p. 91 f.).

With regard to the application of the Business Model Canvas, it had to be adapted to the special features of digital business models and in particular to the special features of economics of platforms and service sciences.

Furthermore, the "Business Model Canvas" was applied in four different scenarios, all of which in themselves represent a possible recommendation for a business model. At the end of each scenario, this is examined and summarized by means of a SWOT analysis. This is then followed by a recommendation of the legal form for each of the four.

Within the scenarios there are overlaps, which are also referred to in the respective subchapters. This is best illustrated in the following example: Since it makes no sense, for example, to mention considerations from scenario 1, which may be the same for scenario 4, in one and the same form at this point, in such cases a reference is made to scenario 1.

At the end of each SWOT analysis, the strengths and weaknesses are usually set against the opportunities and threats in order to derive options for action. However, this is carried out within the chapter Conclusion and Outlook of this thesis, since this also corresponds to the logical structure of the paper.

4 Empirical section

In this chapter, the results of the scientific investigation, including interpretation and verification of the hypotheses, are broken down and discussed.

4.1 Competitor Analysis

The business area of automated license clarification is a relatively new one, therefore the classification and classification of potential competitors is a rather difficult task. The three fundamental questions that DALICC must ask itself in order to identify potential competitors are:

1. is the service concerned with licensing in any way? If the question can be answered with "yes", then it is a potential competitor.
2. how does the competitor compare to DALICC's 4 main service areas?
3. what exactly does this service do?

To approach this task in a systematic way, we will first take a look at DALICC's service portfolio. It defines its own service portfolio into 4 key areas:

1. a license library
2. a license creator
3. a license clearance engine
4. an option to export licenses

In the area of licensing, however, there are two different forms of automated license clearing: vendor specific and vendor neutral/universal license clearing. **Vendor Specific License Clearing** means that the type of service is very much tailored to the end customer or certain, precisely predefined programs such as SAP or Oracle applications. **Vendor Neutral/Universal License Clearing** means that the service area of license clarification can use a much broader area and is not limited to predefined applications, but is able to offer clarification in all forms of conceivable license law areas.

During research a total of 7 possible competitors were successfully identified. The degree to which they actually touch upon DALICC's business model remains to be explained in the following chapter, as some competitors offer services merely in the form of consulting, others offer some sort of software or platform solution and some offer both.

The following table is meant to offer a brief overview of all competitors and identify what kind of service portfolio, what form of value creation and what kind of revenue model they have.

Table 2 Overview of competitors service portfolio, form of value creation and revenue model-own design

COMPETITOR	SERVICE PORTFOLIO	VALUE CREATION	REVENUE MODEL
TLDR LEGAL	• license clearing and collaborative license editing	• peer review system • certain degree of legal advice, however without certainty • free of charge	• registration • voluntary sponsorship
PLUS-Picture Licensing Universal Software	• picture licensing Glossary • License Generator • Media selector • PLUS Packs • PLUS Decoder • License Data Format • Plus Standards Library • Plus Artist and Licensor Registry Search	• simplification of image licensing • setting a global standard for image licensing issues • setting a basis for easier engagement in contracts • free of charge (voluntary paid memberships)	• sponsorship from within the community
Copyright Clearance Center	Services for Businesses: • Annual Copyright License • RightFind® • RightFind® Document Delivery • RightFind® Insight • RightFind® Business Intelligence • RightFind® XML for Mining • Motion Picture License • RightFind® Music • Bulk Reprints and ePrints • Pay-Per-Use Permissions For academic institutions:	• serving as an intermediary between a rightsholder and anyone who wants to purchase access to the licensed material	• derived from arranging copyright/royalty compliance agreements • earns 15% commission on fees it collects • passes 70% of its revenues to publishers in Royalty Payments • the other 30% of revenue is kept by CCC as a fee for its services • through organizing educational events, webinars and offering certificates

COMPETITOR	SERVICE PORTFOLIO	VALUE CREATION	REVENUE MODEL
	• **Annual Copyright License** • **Get It Now** • **Pay-Per-Use Permissions** • **MOOC Content Licensing Solution** • **SelectText.** **Solutions for rightsholders:** • **Annual and Pay-Per-Use Permissions** • **RightsLink for Permissions** • **RightsLink Author** • **Republication Service** • **Get It Now** • **RightsCentral** • **RightFind® XML for Mining Solution** **For any and all customers:** • **webinars** • **certificates** • **educational events**		
Fossa	• **continuous scanning and analysis of licenses (in the background) → deep code scanning** • **reporting and compliance documentation** • **integration into cloud and any or all programs within a customer's OS** • **continued support & onboarding**	• **enabling customers to automatically and continuously scan and comply with open source licenses and thereby being as legally compliant as possible with the least amount of possible effort** • **minimization of risk**	• **subscription model** • **1.Personal Plan (free)** • **2.Enterprise Plan (46 dollars per month and developer)**

COMPETITOR	SERVICE PORTFOLIO	VALUE CREATION	REVENUE MODEL
	• License checklists • audit logs & reversible work history • manage& remember compliance work		
Licentia	• consulting • lectures • workshops • seminars • tailor-made solutions for customers	• intermediary between their customers and the license grantors • assistance in case of software license audits • consulting in devising a coherent IT-strategy • consulting in license management	• unidentified • disclosure upon email or telephone contact only
Licentia Inria	• license search • license compatibility check • license visualization • license download • license conversion to RDF	• available for free • allows for unlimited use	• mere research project by the French Institute for Research in Computer Science and Automation • government financed
Aspera	• full-service provider in SAP, IBM, Microsoft and Oracle license optimization • provider of software asset management • SmartTrack platform	• automated and therefore cost saving license management and monitoring • support and training for customers	• unidentified, since price disclosure upon email or telephone contact only • 2-day training sessions cost 550 €

4.1.1 TLDR Legal

TLDR stands for "Too Long; Didn't Read" from everyday office life in the English-speaking world and is registered as an LLC within the state of Delaware in the United States of America. This platform offers license clearing, but only primarily for software licenses and purely on the basis of the web-based platform.

4.1.1.1 Service Portfolio

Its service portfolio consists of license clearing and collaborative license editing. There is not much information to find about TLDR Legal and their service portfolio, even on its own website. The only information it offers is found in a relatively well-hidden sub-section called "Blog". Without a deeper understanding of the subject, it is almost impossible to understand at a glance what TLDR Legal actually does. However, they appear to have a strong community focus, meaning that they encourage their own community to contribute and add to their license clearing process, which is also part of their service portfolio.

If content is edited, the community will review the changes and discuss whether that change was helpful or not, much alike collaborative platforms like Wikipedia. In order to access TLDR Legal's services, one needs to register and sign up for a personalized account. So far, it is not clear what that entails or to what kind of costs that might lead for the user. They also offer a developer API which is built around the service itself to offer easy access to other applications and programs. All data for this API is provided in JSON, and it furthermore offers "simple and straightforward schemas (easy data access centered on key-value), data partials, built-in pagination and GET query params [sic], impersonation to do authenticated operations off-site [and] rendering license partials in HTML and as images". (TDLR blog, n.d.)

The number of employees is unknown, the legal form of the company is an LLC with its headquarters in Delaware, like numerous other US companies, which settle there in the form of a company for tax reasons (Delaware.gov, n.d.). However, the company is actually managed from California. In the area of service offerings, however, TLDR is vendor neutral, as it does not specifically focus on company-specific software.

A personal profile, according to the description in the "Blog" section, includes its own dashboard for the user profile, reputation points and notifications for user actions. Furthermore the blog announces to soon include new features called "Organizations & Groups", "Badges and Achievements" (indicating some type of reward system, often used in online games or on social media platforms), a user and community index, a general discussion hub as well as redesigns of all current user-oriented pages and "polished" discussion features. Nevertheless,

there does not appear to be much activity on their website, since the last time the blog has been updated, was July 21, 2015, and the newly announced features do not appear anywhere on the website.

4.1.1.2   Value Creation

Their claim is that they offer "software licenses in plain English", which works in the following way: the user can look up licences and get a straightforward, relatively easy explanation on what they entail. The real value is created through a peer review system which makes these explanations possible to begin with.

In their Verified Licences section users can make sure that whatever description or information they are reading about a license has been reviewed and checked by a "lawyer/expert" (TDLR Verified, n.d.). However, the company does not guarantee legal certainty here, although a small "verified" check mark next to each summary is intended to give the user an impression of a certain degree of certainty. Nevertheless, the portfolio of only 15 already verified licenses is comparatively small. Another factor in the value generation of TL;DR legal is the so-called "community hub", where users are ranked according to their reputation on the site, in terms of satisfactory response or competence in the area of license topics. Thus, a large part of the value arises even before the actual legal verification through the community.

This seems to be the point where the full extent of TLDR Legal's value proposition is already exhausted. However, as already mentioned above, the site has not been maintained since 2015, and more detailed descriptions of the services offered are missing, so it is impossible to say anything more about value creation at this point.

4.1.1.3   Revenue Model

It is not completely clear whether TLDR was just some form of test project for FOSSA, which has not been continued or whether it has simply served as a trial company that got developed into something more refined. Reason for these assumptions is the reference to the website of Fossa (another competitor) with the wording: "Try FOSSA from the creators of tl;drLegal" and "Copyright © 2012-2017 FOSSA, Inc. All rights reserved" as well as the fact that the CEO/founder for both companies is Kevin Wang (TDLR blog, n.d.).

In order to use the community services, submit a license and access all of the sites functions you have to register and account with your email address etc. and sign in. If you do so, you get access to the verified licenses, the possibility to compare licenses and the "Attribution Document Generator". All of these services appear to be for free. Given the fact the site hasn't

been properly updated since 2015 and announcements about a "developer API coming soon" it is doubtful that there is a proper revenue model in place.

Gaining access to all of the functions described above is based on registration, but it is unclear what kind of costs that entails for each user, if any at all. There is a subpage that allows signing up for becoming a sponsor, but it is not functional when one tries to follow the link. This only adds gravity to the assumption of TLDR Legal being a discontinued test project or test page for FOSSA Inc.

4.1.2   PLUS-Picture Licensing Universal Software

The PLUS Coalition Inc. is a non-profit organization registered both within the state of California in the United States of America as well as PLUS Coalition LTD in Europe.

4.1.2.1   Service Portfolio

The Picture Licensing Universal System (PLUS) is an association of "ad agencies, application developers, artist representatives, design firms, illustrators, legal experts, photographers, publishers, researchers, stock agencies" etc. and it describes itself as "a cooperative, multi-industry initiative [which] provides a system that clearly defines and categorizes image usage around the world, from granting and acquiring licenses to tracking and managing them well into the future." (PLUS a, 2018).

Basic membership registry is free, however free donations and becoming a "supporting member" or a "sustaining member" is encouraged and rewarded trough special benefits described in section 4.1.2.3 Revenue Model.

PLUS offers a free picture licensing Glossary which is "created and scrutinized by a broad cross-section of professionals […] regularly expanded and updated", meaning they are promoting the idea of common creation or open source only within their own "membership-only"-community, whose goal it is to find a common basis and dictate the terms for the entire industry (ibid., 2018).

This review-based model is a comparatively slow process compared to their "PLUS registry", where you can look up "rights and descriptive information ("metadata") for any image, and to find current contact information for related creators, rights holders and institutions", since metadata can be reviewed and validated relatively easy and time-efficiently (ibid., 2018).

Registered users are offered software called "Media Matrix" which enables the PLUS community to organize different forms of media by type or codes of billing etc…

The PLUS License Generator can be used to generate a "PLUS Universal License Statement", meaning that users can create their own licenses based on their very own needs and then share them with the PLUS community. The license generator also allows users to export their "license metadata in an XMP file […] [so they can] embed […] [their] license in a digital image" (PLUS b, 2018).

The PLUS Media Selector is a search engine used to search the PLUS Media Matrix, which is their database in which PLUS organizes "media categories, media types and media options into a universal structure for use in image licensing interfaces" (PLUS a, 2018).The Media Selector is therefore designed to offer a step by step look through an otherwise automated process which enables the user to understand how ID's, usage codes or summary codes are generated within the Media Matrix (ibid., 2018).

PLUS Packs is basically a set of predefined licenses which can all be accessed and put to use via the PLUS License Library. Getting access to that library requires each user to register, though.

Another feature tightly tied to the matrix and library is the PLUS Decoder, which allows "to transform any PLUS Matrix-ID or PLUS Media Summary Code into its text description" (ibid., 2018).

Another service offer by PLUS is the "License Data Format" which provides both the Glossary as well as the Media Matrix in machine-readable data format, enabling the whole PLUS service portfolio to provide "a single, worldwide standard for describing licenses" (ibid., 2018). The License Data Format or LDF serves as a metadata schema for image licenses and is meant to contain necessary information about any image license like media permissions, constraints, requirements, conditions etc. It serves as an explanation as to how users can understand each short description within a license and it also provides a certain guideline on which points to include or exclude when devising a license yourself through the License Generator.

In short, the PLUS LDF offers "licensors and licensees […] [to] leverage new technologies to write, read, track, store and analyze the details of every image license much more easily" (ibid., 2018).

Through the PLUS Registry users can search for metadata on any image that is registered in PLUS look up contact information on individual right holders and register themselves in order to be found by other users.

4.1.2.2 Value Creation

By using "standardized language, a machine-readable coding architecture and a global registry (ibid., 2018)", PLUS aims to simplify image licenses and make them become more transparent. This helps all stakeholders to streamline their work processes concerning any kind of digital imagery.

It doesn't help creating contracts nor does PLUS involve itself with topics like pricing, but tries to offer "a system to define licensing language and provide a foundation for building and managing image rights data" (ibid., 2018).

Furthermore, the community project develops its own standard or tries to set a worldwide industry standard for the licensing of pictures. In terms of value creation, PLUS appears to offer their community a great deal of free legal support concerning matters of licensing.

In this day and age, where any digital material can easily be shared, distributed and redistributed via the internet, it is only logical for anyone with a business interest in the field of image licensing to establish and engage in finding solutions to property and licensing issues.

In that respect PLUS offers a great deal of value for any industry or individual dealing with any form of digital imagery, whether it would be "ad agencies, application developers, artist representatives, design firms, illustrators, legal experts, photographers, publishers, researchers, stock agencies [or] all their trade organizations" (ibid., 2018).

4.1.2.3 Revenue Model

The cooperatives website and its services do not address pricing or price negotiations or the creation of "any rigid forms or contracts", as it understands itself "purely [as] a system to define licensing language and provide a foundation for building and managing image rights data (ibid., 2018)"

They only concern themselves with picture licensing, but the aim is to extend their reach globally.

So that said it first and foremost works as a cooperative, furthering its own interests, therefore its service portfolio is not commercially designed and "operated on a non-profit, cost-recovery basis, supported by optional contributions from its 'Supporting Members' and 'Sustaining Members' in more than thirty countries" (ibid., 2018).

> "[..] basic PLUS Registry listings and searches are free, and while the use of the PLUS standards is free, Supporting and Sustaining members receive additional benefits including unique PLUS identifiers, access to enhanced features of the Registry, listings in the PLUS Showcase,

promotional benefits, the option to participate in PLUS standards activities and more. PLUS welcomes all individuals and organizations from all user communities in all countries to join the PLUS Coalition as Supporting or Sustaining members. For simplicity we have stated the contribution amounts in US Dollars below. We welcome contributions in any currency. (PLUS, 2018)"

The consortium's goal considering revenue therefore appears to be achieved rather through their long-term goal of reshaping the entire industry of image licensing and setting common standards than gaining substantial revenue through their online platform.

4.1.3   Copyright Clearance Center

The Copyright Clearance Center (CCC) is a US-based organization specializing in rights licensing concerning "printed and digital books, trade journals, newspapers and magazines as well as films, TV shows, pictures, blogs and eBooks" (Copyright Clearance Center, 2015). Through that definition it acts as a sort of license broker (Rubin, 2012).

4.1.3.1   Service Portfolio

The company works as an intermediary between publishers, individual authors and end users. CCC was founded in in 1978, is legally based in Danvers, Massachusetts, incorporated in New York State, however, and registered as a not-for-profit company until 1982, when it became a private company (PrivCo, n.d.). They offer their services world-wide, sometimes through their "international subsidiary is RightsDirect" (Copyright Clearance Center, 2015).

Their service offer consist of web-based tools that, as a business or academic institution, allow you worldwide use of copyrighted material without accidentally infringing copyright, which at least is the company's promise (Rights Direct, n.d.). Through that, they claim to serve over 35,000 companies and over 12,000 authors and publishers around the world (Copyright Clearance Center, 2015).

They offer a wide array of services for businesses, like "Annual Copyright License", "RightFind®", "RightFind® Document Delivery", "RightFind® Insight", "RightFind® Business Intelligence", "RightFind® XML for Mining", "Motion Picture License", "RightFind® Music", "Bulk Reprints and ePrints" and "Pay-Per-Use Permissions" and other services designed for academic institutions, like "Annual Copyright License", "Get It Now", "Pay-Per-Use Permissions", "MOOC Content Licensing Solution" and "SelectText" (Copyright Clearance Center, 2015).

On top of that CCC also offers solutions for rightsholders, like "Annual and Pay-Per-Use Permissions", "RightsLink for Permissions", "RightsLink Author", "Republication Service", "Get It Now", "RightsCentral" and "RightFind® XML for Mining Solution".

Copyright Clearance Center is also active in the field of consulting, offering webinars, certificate programs and educational events.

4.1.3.2 Value Creation

The way CCC aims to create value is by serving as an intermediary between a "rightsholder" and anyone who wants to purchase access to the licensed material.

According to Wikipedia CCC, which was firstly registered as a not-for-profit organization but the United States Internal Revenue Service (IRS) "revoked CCC's tax-exempt status in 1982 and the United States Tax Court affirmed that holding, finding that whatever public benefits CCC's activities might produce, its primary purpose was to 'further the economic interest of publishers and copyright owners, and its founders (a group of publishers) had no 'interests of any substance beyond the creation of a device to protect their copyright ownership and collect license fees'" (Anon, 2018).

So the way CCC creates value is partly by promoting and selling licenses and compliance agreements, but supposedly also by furthering their goal of changing and shaping the industry of licensing trough litigation and lobbying (Albanese, 2012)

4.1.3.3 Revenue Model

As PrivCo, an online private company financial database, states: "The company's revenues are derived from arranging copyright/royalty compliance agreements with an emphasis on the academic market" (PrivCo, n.d.).

"Companies, academic institutions, and other enterprises seeking permission to use copyrighted materials can buy comprehensive subscriptions to CCC's repertory of works or purchase rights on an as-needed basis. Rightsholders [sic] receive royalties when the copyrighted materials are used" (Hoovers, n.d.).

According to Wikipedia, which references this to the previously mentioned website called PrivCo, CCC is "earning a 15% commission on the fees it collects" (Anon, 2018), while brokering licences and the company "passes more than 70% of its revenues to publishers in the form of Royalty Payments to Rightholders [sic], and another 30% is kept by the company as a fee for its services" (Anon, 2018).

CCC offers two kinds of licenses: repertory (annual) and transactional. Both of those are offered through services designed for businesses (Copyright Clearance Center, 2015).

"Through these, and multiple other mechanisms, CCC collects fees which represent royalty payments and then periodically distributes these monies to participating rightsholders [sic]. CCC meets its operating expenses through allocating a fraction of these fees" (Anon, 2018).

Another way of income for CCC is through their webinars, certificate programs and educational events, which appear to vary in cost, depending on the event, seminar or program.

4.1.4 Fossa

FOSSA Inc. is a tech company based in San Francisco, USA, employing between 11 and 50 people (Crunchbase, n.d.). They are registered as a for profit company (ibid, n.d.). FOSSA is the continuation of TLDR, or in simplified terms TLDR can be understood as a pilot or test project for Fossa Inc.

4.1.4.1 Service Portfolio

Its basic service consists of enabling each customer to automatically and "continuously scan and comply with open source licenses" (FOSSA, n.d.).

Bloomberg categorizes the company and its service portfolio as offering "open source compliance solutions for real-time defense against license violations." This means that their service constantly and preemptively analyzes a program's or software's code in order to minimize risk and fulfil license obligations:

"It analyzes various commit and update BOMs/attributions; scans various code lines for license data, captures raw copyright headers, and licenses to inline in attribution; surfaces actionable and context-aware suggestions; and enables users to plug compliance into existing workflow" (Bloomberg, n.d.).

FOSSA's main focus lays on enabling an easy implementation of Open Source Software all the while using Open Source software themselves to do so (Vaughan-Nichols, 2018). This key component to their service portfolio is Fossology, "a framework, toolbox and Web server application for examining software packages in a multi-user environment" and part of the Linux Foundation (Fossology, n.d.).

Their service "supports over 15 languages and environments" including "JavaScript, Java, Ruby, Golang, and PHP" and operates as "a web service, written in Go, that you import from GitHub" (Vaughan-Nichols, 2018).

In order to ensure the usability of their service, yet still maintain uphold a high quality standard of their analyzations, concerning legal language and knowledge, FOSSA's "team includes experienced open source Silicon Valley lawyers" (Crunchbase, n.d.).

In brief, FOSSA's main business is in ensuring automated license compliance mainly within the world of implementing new Open Source Licenses into already existing software (Williams, 2018).

4.1.4.2 Value Creation

The key figures the company offers on their website consist of KPIs like their approximately 1 million actively tracked codebases, their 35,000 automated audits, their 10+ active OSF partners and their 2,2 million dollars in funding.

In terms of value creation the benefit FOSSA offers their customers to be as legally compliant as possible with the least amount of possible effort (Crunchbase, n.d.). Their promise of instant integration allows users to utilize FOSSA instantly and without any complications of having to program or use some kind of interface or API beforehand (FOSSA, n.d.). Furthermore they offer support via their intercom messaging system, which supposedly allows getting in contact with the team directly.

The idea of "real time compliance" appears to be one of their main ideas and strong suits. This means that even while working on a project or coding, the code is constantly being scanned and reviewed for compliance. If there appears to be any problem or license violation, the program instantly sends out notifications or emails to a predefined group of people. At the end of each project FOSSA automatically documents all processes and used components in a report, enabling the customer to instantly revise parts of their project, if necessary.

Furthermore the program instantly devises an exportable history and saves and remembers all compliance work that has already been done (FOSSA, n.d.).

By offering things like "license scanning, dependency analysis and compliance alerts" (FOSSA, n.d.) throughout projects, FOSSA enables companies to minimize risk and enable them to already have a printed out protocol ready for final legal clarification, before putting their product up on the market (ibid., n.d.). That saves time during the project, as well as time and money when admitting a string of code or a complete software product to be looked at by legal experts (ibid., n.d.). License experts having to take a look at the product can then

save time, because they know that most of the issues should have already been resolved during the project, since FOSSA would have notified the programmers, if there would have been some sort of legal conflict (ibid., n.d.). They can then look at the full history in the summary of what FOSSA identified as potentially harmful or non-compliant and what path the project took from there (ibid., n.d.).

All this offers a significant reduction in costs and time both throughout any project as well as at the final phases of legal compliance and introduction into the market.

4.1.4.3   Revenue Model

Concerning pricing and revenue they offer two models: the Personal Plan and the Enterprise Plan, with the former being free of charge, since FOSSA brands itself as a provider of "free open source software analysis" (ibid., n.d.) and the latter being a subscription model, at a price of 46 dollars per month and developer.

The Personal Plan is for small teams and projects (up to 5 people) offering "to replace manual auditing, scripts and lightweight commercial utilities for license / dependency tracking" (ibid., n.d.) and the Enterprise Plan is designed with businesses in mind, adding the following benefits to the free version: "full code scanning, compliance automation […] to help companies set up an enterprise-grade compliance program in minutes" (ibid., n.d.).

That is not the only way, however, in which those two models differ. FOSSA offers a detailed description on their website, all the while stating in their FAQ-section, that annual pricing models are also available on request and not-for-profit companies may negotiate for lower prices.

Regarding scanning and analysis the Personal Plan offer only standard license checks, meaning that "dependencies are licensed for harmful terms (i.e. manifests, license notices, documentation, websites and more) [and it] supports subdirectories and deeper dependencies (to a depth of 3)" (ibid., n.d.). The Enterprise Plan, however, offers unrestricted code scanning, meaning that "alongside standard checks, FOSSA runs full license scans across all deep dependencies per-commit" (ibid., n.d.) and it also "detects hidden [or] embedded GPL, [which is] necessary for most corporate compliance programs" (ibid., n.d.). Concerning reporting and compliance documentation the Personal Plan includes "basic reports and notices" allowing the user to "generate shallow dependency reports, license notices and attribution files in a variety of formats" (ibid., n.d.). The Enterprise Plan includes "deep component reports", which means "full, customizable reports that include all deep dependencies, embedded licenses, code audit data, and more" with even the possibility of FOSSA hosting these files for the user online and automatically updating them (ibid., n.d.). The Personal Plan allows for full cloud integrations,

meaning integration of the customers' "favorite tools and services", whereas the Enterprise Plan allows for custom integrations meaning "custom tools or license policies […] APIs and services - even if they live behind your corporate firewall" (ibid., n.d.). Regarding further assistance in all matters, where the Personal Plan only offers basic support, the Enterprise Plan offers service level agreements including a "Success Manager, custom onboarding [and] installation [and] 360 project planning" (ibid., n.d.).

There is also the possibility of ordering a free demo of their services in order to test their product according to one's needs.

4.1.5 Licentia

Licentia IT GmbH is part of a Hamburg-based IT-consulting group called "Comedia. IT GmbH", which according to Licentia's own website holds about 25 employees and offers professional software license consulting and the implementation of Software Asset Management or in brief SAM (Licentia, n.d.).

4.1.5.1 Service Portfolio

When looking at their service portfolio on their website, it mainly consists of four services: consulting, lectures, workshops and seminars. They do, however, offer solutions tailored exactly to their customers' needs, but that is only available upon request. In the area of consulting Licentia offers an array of different services itself:

Among those are so-called SAM-Projects which can be initiated by a request for self-disclosure from a software manufacturer (ibid., n.d.). Those projects aim to give the customer the security of the contractual use of software and the optimal use of the available licenses as well as an evaluation of the internal processes, their quality and, as a result, an optimized use of all software licenses.

A Licentia SAM project is initiated by a kick-off workshop, followed by taking inventory, evaluation and resource planning, and completed with the presentation of a formal report.

This aims to optimize a company's licensing situation, concerning the programs they use (which all come under different license agreements) and then optimizing their use and possibly even finding new and better solutions, based on the company's needs (ibid., n.d.).

Another part of Licentia's consulting program is License Management, in which they help their customers with license agreement documentation and Licensing Advice, where they offer proactive license optimization, planning and implementation of a long-term IT strategy.

Licentia also helps with license audits, where they prepare customers for possible audits by software manufacturers (ibid., n.d.).

Licentia also offers lectures, where prospective customers can be informed without obligation whilst also getting a broad summary of the topic of software licenses, general workshops that serve the participants as a non-binding preliminary check of their own license situation or individual workshops for more specific license situations (ibid., n.d.). Their seminars are aimed at decision-makers within companies who are looking to attain a Microsoft Licensing Professional certificate or get a better understanding of the licensing aspect of Microsoft products (ibid., n.d.).

4.1.5.2 Value Creation

Generally Licentia acts as an intermediary between their customers and the license grantors. They offer workshops free of charge in which they, together with their customers, evaluate general as well as specific problems in their field. Together they analyze the situation and then develop ways of optimization within the field of licensing. They also assist their customers in case of audits, in the preparation of deployment summaries for software developers. The combined analyzation then results in what they call Effective License Position or ELP (ibid., n.d.). Finally they develop a sort of plan for their customers to hold on to and make their licensing decisions by. Licentia also offers seminars and workshops like MLP-seminars (Microsoft License Professional = MLP) granting their customers an official MLP-certificate or ITIL-V3-foundation seminars which aim at giving them a basic understanding of processes, terms and conditions within IT. They also assist in developing your own business in regard to the management and interconnection between purchase, license-administration and IT-operations. So concerning value creation, Licentia's main input lies in consulting and helping companies devise a coherent IT-strategy as well as having proper license management in terms of the programs their customers use within their IT-structure.

Licentia in that respect deals with license management, however on a different level, as for example FOSSA or DALICC up to this point. In that regard, their license aspect is very vendor specific (and seemingly largely focused on solutions by Microsoft).

4.1.5.3 Revenue Model

Licentia's revenue model cannot be coherently identified, as it requires personal contact with the company in the form of calling them or getting in touch via email (ibid., n.d.). Looking at the information available on their website, however, with parts having already been described

in the section above, dealing with their service portfolio, it is clear that there are some freemium aspects to their business model.

Customers can visit certain workshops or lectures for free in order make them realize the necessity of license management within their own business (ibid., n.d.). One can assume that any further counseling results in making an appointment and then paying for their consulting services.

4.1.6   Licentia Inria

Licentia Inria is a "web service application with the aim to support users in licensing data" (Lincentia INRIA, n.d.) made "and maintained by the Wimmics Research Team: a joint research team between Inria Sophia Antipolis – Méditerranée, […] CNRS and Université Nice Sophia Antipolis" (AIMS, n.d.) based in Sophia Antipolis, an industry park northwest of Antibes in southern France. It is also part of the "French Institute for Research in Computer Science and Automation" (Inria [1], n.d.) or short INRIA. The institute has about 2400 employees, according to its own website, but it is not certain how many of these employees are actually behind Licentia Inria. INRIA's budget is about 230 million Euros, a proportion 25% of that is self-financed (Inria [2], n.d.). There are about 126 software programs registered with France's Software Protection Agency, coming out of INRIA and since 2010 they have raised 44 start-ups and 10 of those in the year of 2016 alone (ibid., n.d.).

4.1.6.1   Service Portfolio

Licentia Inria's service portfolio consists of three main parts: the ability to search licenses, check license compatibility, and visualize and/or download a license. The primary service as they themselves define it is based around a "search engine where data producers can look for a license giving a set of conditions they want to be enforced by the license" (Lincentia INRIA, n.d.). If their engine is unable to come up with a license that fits the customer's description, it will highlight the possible areas of conflict and present them with the next best thing available and closest to what the customer might have wanted (ibid., n.d.).

The License Compatibility Check enables customers to determine whether two licenses or an already existing license are compatible with a set of added conditions or not. If it is, the customer will get the go-ahead and if it isn't the conflicting conditions will again, like in the Search Engine, be highlighted (ibid., n.d.). The license visualization and download option allows users to get "a graph-based visualization of the licenses, and then he also can download the RDF version (Turtle syntax) of such [a] license" (ibid., n.d.).

4.1.6.2 Value Creation

The value proposed by Licentia Inria derives from the fact that the entire web service application is available for free and allows for unlimited use within the boundaries of the application's capability, which to this point is rather limited. The fact that the website's copyright dates back to 2014 and the websites structure hasn't undergone any perceivable changes since then, allows for further doubt of its added value to any company or individual interested in license clarification, visualization or other service Licentia Inria has to offer (ibid., n.d.).

This fact leaves doubt whether Licentia Inria would at all be used by anyone who wants a quick, unexpansive yet serious way of checking or searching for different kinds of licenses for their business.

4.1.6.3 Revenue Model

The Institute itself is financed through French taxes and has a budget of roughly 230 million Euros, so Licentia Inria's services lack any conventional revenue structure like that of FOSSA (AIMS, n.d.).

In conclusion, Licentia Inria may not have been intended for commercial use however, since "serializations [like Licentia Inria] are just proof of concepts and lack a sufficient level of usability and legal validation to be suitable for commercial purposes" (Hoppe, Humm, Reibold, Pellegrini et. al., 2018). The budget of INRIA, or the "French Institute for Research in Computer Science and Automation", however, allows for building a system like Licentia Inria, just to prove the point that there is a need for various forms of automated license clearing.

4.1.7 Aspera

Aspera GmbH, founded in 2000, is a full-service provider in SAP, IBM, Microsoft and Oracle license optimization, in particular of engines, databases and indirect use as well as a general software asset management (SAM) specialist (Aspera [b], n.d.). The way Aspera themselves describe SAM is as "a business strategy to optimize budgets and minimize software expenses through active control and automated procurement, use and provision of software licenses" (Aspera [d], n.d.).

The company itself is headquartered in Aachen/Germany and is part of USU Software AG, also headquartered in Germany. USU Software AG is an umbrella company for various

global subsidiaries in the field of IT, like software, customer services, digitization etc. (USU, n.d.).

Aspera, according to its own website, has about 180 employees (Aspera [b], n.d.).

4.1.7.1 Service Portfolio

Aspera offers products like SmartTrack, a platform they devised themselves, which serves as the foundation and backbone of their technology and provides customers with automated license management.

This is part of their Strategic License Management which means that information concerning licenses, contracts and financial information (concerning their customers' product licenses) is always immediately available through that system, which allows for correct allocation of licenses and alerts them to potential dangers concerning compliance (Aspera [a], n.d.). Due to this program's web-based interface, it is scalable and can be easily integrated into existing IT environments (ibid., n.d.). Their SmartTrack system comes with several different functionalities and options: SmartTrack Platform, Software Catalog, SmartTrack Financial Management, SmartTrack FlowControl, SmartTrack Optimization (ibid., n.d.). Whether or not these are all part of the package when you buy their SmartTrack system is unclear, and further information is only available upon personal request. It is, however, likely that customers can buy each option independently. How that would be integrated into their IT environment is also not clear. There is however the option of trying the service out via a demo.

Aspera also offers consulting services on top of their software products, like: LaaS, Consulting, Project Management, Licence Clearing, Software Recognition Engineering and Software Integration (Aspera [b], n.d.).

By offering consulting on "project management, process and integration" they try to give customers a better understanding regarding SAM projects (Aspera [c], n.d.). By offering consulting on "data migration from legacy systems" Aspera tries to help customers to refine their existing processes, systems and their interface requirements (ibid., n.d.). They also aid their customers in optimizing server configurations, licensing models, and compliance results and offer training and workshops for all their projects and SmartTrack users (ibid., n.d.). Aspera also offers trainings and constant support to all their customers (Aspera [b], n.d.).

According to their own website, the company realizes all projects both as a full-service provider as well as in close cooperation with strategic partners (ibid., n.d.).

4.1.7.2 Value Creation

Aspera's platform SmartTrack platform as well as their consulting services provide their customers with an automated and therefore cost saving license management as well as a way to ensure compliance regarding the licenses of their entire IT structure.

Their license clarification and license compliance through either consulting or their SmartTrack software consists mainly in managing and monitoring licenses of software already in use within their customers' companies. In that respect it differs greatly from competitors like FOSSA or Licentia Inria.

The market Aspera taps into is nevertheless also an important one for licensing and regarding the number of their employees, appears to be a rather significant one at that. Furthermore Aspera also offers constant support and training, regarding their SAM projects and SmartTrack system which enables them to stay up to date on their customers' needs and collect valuable data on them during that process.

Since they are part of a global umbrella company, and Aspera themselves are also active globally, they describe their customer base as following: "institutions, medium-sized companies, large international companies and globally active corporations" (Aspera [b], n.d.).

4.1.7.3 Revenue Model

Aspera's revenue model regarding pricing is rather opaque, since there are no prices or pay models available on their website. In order to get access to prices or any of their services and solutions, personal contact via email or phone call is required. From there on out one can assume that you get in contact with their sales team who then run each customer through their specific needs and how Aspera can tend to those.

There is the option of ordering a demo, but one needs to get in touch with them and there is no further indication on whether it is free or not (Aspera [c], n.d.). Following this assumption, each customer most likely gets an Apera sales representative, who assesses their situation and then offers some sort of tailored combination of consulting and their SmartTrack system. Support most likely comes as part of the whole package. Individual training sessions, however, cost 550 Euro per session and last about two days (Aspera [e], n.d.).

5 Discussion

In the following chapter you will find summary arguments for the results of this investigation, as well as any limitations and delimitations.

5.1 Summary of Findings

As described in the introduction of the competitor analysis, one of the first questions that needed to be asked in order to ascertain whether the author was dealing with a potential competitor of DALICC, was to see whether they had any business whatsoever in the field of licensing. If that question could then be answered with a "yes" they could be considered a competitor. DALICC currently operates in a very specific area of licensing, offering four main areas of service like a License Library, where users can look up a variety of standard licenses and their possible associated permissions, prohibitions and obligations, a License Composer where users can create their own individual license, a License Negotiator which detects possible conflicts between licenses and a License Annotator where users can export a machine readable as well as a human readable version of their chosen license. DALICC's licenses, however, are not limited to software products only and are not in any form vendor specific, meaning tied to a specific type or form of provider like SAP, Microsoft etc. Also DALICC currently offers no form of consulting. These are all factors that need to be taken into account when looking at possible competitors and trying to rank them in any way, regarding the degree of competition.

In order to be able to derive a meaningful recommendation for DALICC based on the potential competitors (defined in more detail in the competitor analysis), these were broken down into service portfolio, value creation and revenue model. In the same way, they are now to be summarized in chapter 5.1 Summary of Findings, however without describing each potential competitor in minute detail.

In general terms, two types of potential competitors can be distinguished: those that deal with licensing in the sense of DALICC, i.e. with license clearing for (mostly) derivative works, and those that deal with internal licensing administration. The first category includes TLDR Legal, FOSSA, PLUS (Picture Licensing Universal Software), CCC (Copyright Clearance Center) and Licentia Inria, the second category includes Licentia and Aspera. Within these two broadly subdivided categories of competitors, however, there are different approaches to the topic of licensing. While TLDR Legal, Licentia Inria or FOSSA provide their users/customers with a very open set of tools and do not specify what type of license(s) they can edit/search, providers such as CCC or PLUS are very specific in their portfolio. CCC specifically deals with copyright issues within the area of "printed and digital books, trade journals, newspapers and magazines

as well as films, TV shows, pictures, blogs and eBooks" (Copyright Clearance Center, 2015) and PLUS "defines and categorizes image usage around the world, from granting and acquiring licenses to tracking and managing them well into the future" (PLUS a, 2018). Since the licensing approach of providers such as Licentia or Aspera mainly concerns the area of personal consulting and holding seminars or workshops in the area of internal license management, these two potential competitors do not currently overlap in any way with DALICC's portfolio of services.

These two fall under the "vendor specific" category mentioned above (see 4.1). All other potential competitors can thus be defined as "vendor neutral". However, this definition is applied purely in the context of this thesis and serves to better understand the partly different views of licensing among the identified competitors.

Since CCC and PLUS deal with licensing, but CCC mainly deals with copyright issues and PLUS mainly with rights and licenses of image material, these can also be seen as secondary competitors. Both are specialists in their field and have the possibility to make full use of their special area of competence, also due to their size. Like CCC, PLUS is a non-profit consortium and, however unlike CCC, it is also managed and perceived as such. These considerations foreground the three remaining providers as direct competitors of DALICC: Licentia Inria, TLDR Legal and FOSSA. The former, however, is a test version or quasi-test company of FOSSA. TLDR still offers most of its functionalities free of charge, while FOSSA offers a free basic version and a paid version linked to a subscription model. Both providers were created by the same people, although TLDR Legal, as already mentioned above, has not been maintained and updated for some time (see 4.1.1). Licentia Inria is a project of the "French Institute for Research in Computer Science and Automation" and offers its functions such as its license search engine, its license compatibility check, its license visualization or its RDF converter free of charge. But Licentia Inria also does not seem to be regularly maintained and updated, as described above (see 4.1.6), which in turn reduces its ability to compete with DALICC.

For this reason, FOSSA is the only direct and immediate competitor of DALICC. Like DALICC, FOSSA also makes use of the expertise of external legal experts in the field of licensing, who in turn ensure the validity of all licensing issues in the portfolio of services. Unlike DALICC, FOSSA is already based in San Francisco and is thus "close to the source" of numerous large and economically important technology and IT-related companies and has already been able (according to its own statements) to win customers in this area.

In conjunction with the theoretical foundations of this work, the following aspects can be clearly identified and verified to the following degree:

The Service Dominant Logic, i.e. the consideration that services should "represent the process of mutual value creation for all parties involved" (see 2.1) can be found among almost all of the competitors mentioned above. Since all potential, identified competitors offer services to some extent, it is not necessary to state in minute detail that they are all part of the described "service economy" and thus also subject to the associated logics. However, based on the theory of homo socialis and Service Science in combination , many of the competitors described above also aim to serve a common good: providers such as PLUS, Licentia Inria or TLDR Legal, for example, offer their services free of charge. This does not mean that these providers do not benefit in one form or another: FOSSA, for example, offers basic functions free of charge, while extended access is linked to a paid subscription.

The participatory character, i.e. to involve the customers/users in the design and creation process of services, which can be found both within Service Science and the associated Service Dominant Logic as well as in the theoretical foundations of the Economics of Platforms, can be found in almost all competitors.

This can be observed in different ways: TLDR Legal for example integrates its community with the revision of changes in licenses etc., PLUS is a collaborative project, which is purely based on the participation of its individual members, but even companies like Licentia or Aspera need their customers' feedback to provide their services efficiently and effectively.

These "cooperative motivations" (Helbing, 2013, p.18) described in the Economics of Platforms are particularly important for all potential competitors located in the "vendor neutral" group. Since these providers are not primarily concerned with personal consulting services in the area of internal license management, but actually deal with different licenses of, by way of example, images, written works, software or other intellectual property, the (mostly not directly physically accessible) community is all the more important.

The competitors that fall under the "vendor specific" category are usually in direct, personal contact with their customers, from whom they may need feedback, but which is not directly involved in their value creation process (although the value creation process in this case also consists of a consulting service and thereby falls into the service category).

Presuming in the real sense, i.e. to involve the consumers/users simultaneously as producers in the process of value creation, makes the most sense for competitors such as FOSSA, TDLR Legal, PLUS, Licentia Inria or possibly also CCC. The self-regulatory aspect of communities can also be found in providers such as TLDR Legal. As already mentioned, DALICC also offers the possibility to use its community of users to improve its own service, as well as to improve individual licenses (see 1.1.1). In the example mentioned above (see 1.1.1), in which a company that builds a customized license with the help of DALICC has the rest of the user

community check the usefulness of the Dominant Logic service as well as the principles of homo socialis, in which the cooperation of all parties involved (providers, users/consumers, etc.) also benefits everyone. In this case, homo socialis can best be understood as a model prototype of the Economics of Platforms and Service Dominant Logic.

Open source is another form which makes sense not only from the point of view of Service Dominant Logic, but also from the point of view of homo socialis. As already explained in more detail in the theoretical part of this paper, open source logic is used by numerous successful companies (2.2) and also by direct competitors of DALICC, such as FOSSA. On the one hand, FOSSA uses open source to implement its services and, on the other hand, it specializes in open source licenses and the "easy implementation of open source software" (see 4.1.4).

But open source is only a part of what DALICC is about. In addition, the previous differentiation of potential competitors into "vendor specific" and "vendor neutral" can also only make a partial contribution to the development of DALICC's business model. Therefore, it is suitable to analyze potential competitors using the figure from Brousseau and Penard shown in chapter 2.2.2.

Comparing the digital business models of all potential competitors
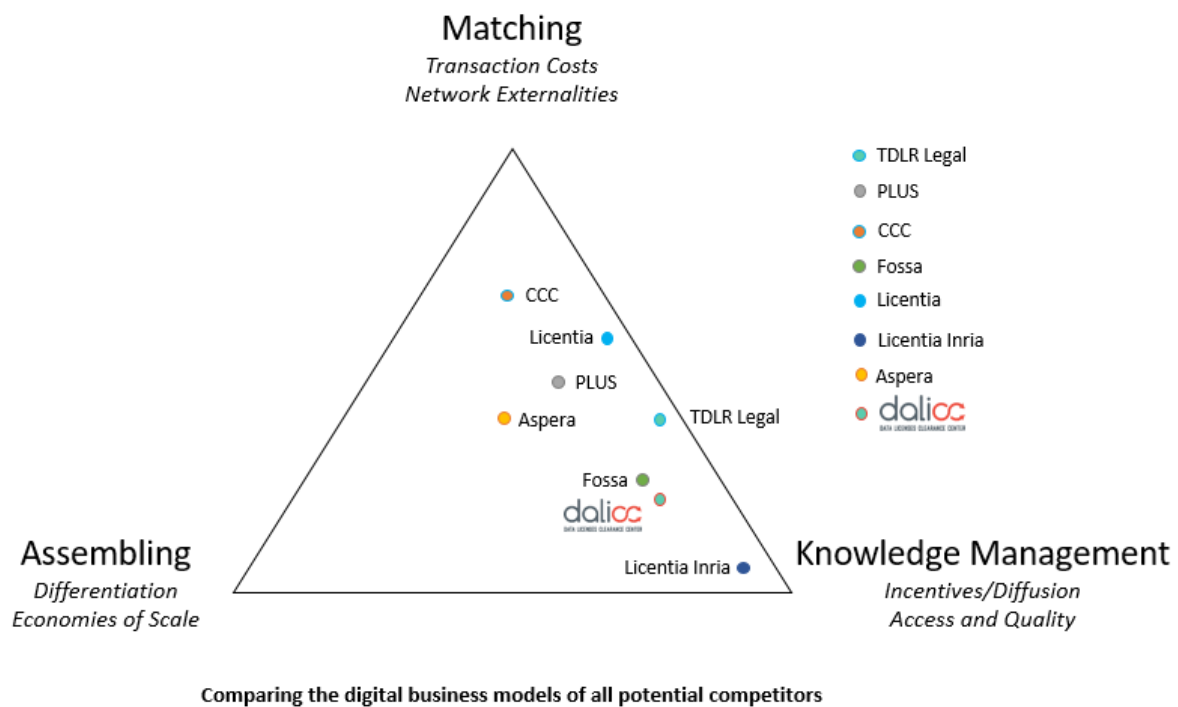
Fig. 6: Normative comparison of digital business models of all identified competitors- own graphic based on Brousseau & Penard (Brousseau/Penard, 2007, p.87)

For this purpose, they are normatively located within the triangle of matching, assembling and knowledge management on the basis of their product portfolio. As explained earlier, digital business models are usually a mixture of "matching", "assembling" and "knowledge management" to some extent. Therefore, the surface of the triangle shown in Figure 6 serves as a projection surface for the intensity of the respective characteristic of mixed forms between the three extremes of "pure" matching, assembling and knowledge management (see fig. 6).

A closer look at Figure 6 reveals that most potential competitors are mainly between knowledge management and matching. The only outlier from the group is Aspera, as it also has strong assembling components. For this reason, the placement of Aspera within this chart will be explained first. Aspera mediates between program manufacturers such as Oracle, Microsoft, IBM, etc. and their users by offering courses and seminars for license optimization (see 4.1.7) and at the same time they actively take care of direct knowledge transfer in the area of budget optimization, etc. with their application customers. In this respect, the company already has almost equal shares in the areas of matching and knowledge management. Furthermore, the German company also makes its own SAM (Software Asset Management) software available to its customers for purchase. It thus compiles its own software and is also active in the field of assembling - although Aspera is not to be understood as a digital platform but rather as a

provider of various services (although mainly consulting services) in the field of vendor-specific licensing. Due to that, it is located right in the middle of Broesseau's and Penard's triangle figure (see fig. 6).

Licentia Inria, of all identified potential competitors, is the most strongly positioned in the field of knowledge management, as it is a scientific web service application project funded by the French government (see fig. 6). In its 4 main functions, Licentia Inria basically offers a similar portfolio to DALICC. However, the French web service application does not hold such a large license library and doesn't allow for the same amount of possible licenses or license combinations, it is not regularly maintained or updated and fundamentally more limited in all functions than DALICC.

CCC, or Copyright Clearance Center, sees itself as a non-profit consortium but is a private company which earns money by mediation or as a license broker (see 4.1.3). The company can be understood as an intermediary between publishers, individual authors and end customers (see 4.1.3). For this reason, CCC is most likely to be found in the area of matching, although license management is also always about knowledge management. As is described in the matching section by Brousseau and Penard and can also be seen in the triangular graphic, CCC can assert global network effects for itself and is the world's largest provider in the area of copyright license management. This further underpins the thesis that CCC is most prominently located in the area of matching. Since the company also offers its own software solutions to support its brokerage activities, it also has shares in the assembling sector. However, these are not so pronounced that they would overshadow the mediation activities. For this reason, CCC is the potential competitor of DALICC which, after Brousseau and Penard, can be found most prominently in the matching sector (see fig. 6).

Licentia offers Software Asset Management (SAM) and sees itself most likely as a consulting firm in the area of vendor-specific, internal license management. The services offered consist of consulting, lectures, workshops and seminars (see 4.1.5, p. 52). Since all these consulting services are vendor specific and not universal in themselves, Licentia is also best located in the field of matching. The knowledge transfer which accompanies their consulting services however, can also be understood in part as knowledge management. For this reason, Licentia is to be placed more in the upper range, i.e. matching, in Figure 6, but still on the right side between knowledge management and matching (see fig. 6).

PLUS is quite similar to CCC, as both providers serve a very limited area within licensing, as already mentioned in this chapter. PLUS has specialized in licenses regarding image material. Since all functions are available online in the form of a Web Service Application and are made available to members of the consortium free of charge, PLUS cannot be located tending as

strongly towards assembling as, for example, CCC. As an association that finances itself purely on the basis of donations from its members and tries to create standards within its own industry for the benefit of all involved (see 4.1.2, p.43 f.), PLUS also operates between matching and knowledge management (see fig. 6).

TLDR Legal, which can be seen as a precursor or beta version of Fossa, provides basic licensing information through a strong focus on its own community (and its involvement in the review process of licenses). For this reason, it is located at the extreme right edge along the line between knowledge management and matching (see fig. 6). Matching, because it brings together users who are interested in and possibly qualified for licensing and knowledge management, because TLDR Legal collects (or will collect) legal knowledge that has been (or is) checked by the community and makes it available to its members.

Fossa, the paid extension to TLDR Legal (although it does not refer to itself as such), offers open source compliance solutions to check licenses for compatibility and to react to possible conflicts in real time during programming. For this purpose, Fossa also uses its own extended open source software and has all licensing questions checked for validity by especially dedicated licensing lawyers. As already mentioned above in this chapter, Fossa offers a free basic model and an extended, paid subscription model. The meticulous licensing examination by attorneys familiar with licensing law and the license compatibility checks make Fossa the closest and probably most direct competitor of DALICC. For this reason, the two in Brousseau and Penard's representation must be located in relative proximity to one another (see fig. 6). The only difference is that DALICC can be located even more strongly in the knowledge management corner, as it has no real-time monitoring, like Fossa.

The location of DALICC can already be determined at this point, since it already has a fixed product portfolio, which has already been explained in more detail in chapter 1.1.

It is essential to note at this point that "assembling" (in the context of this work and especially the former chapter), namely in the combination of Economics of Platforms and Service Science, does not have direct hardware characteristics. So when the author talks about assembling here, he does so on the basis of Brousseau and Penard's view that all companies which also "produce the components they provide" themselves fall within the field of "assembling" (see 2.2.2.2 Assembling). Some, if not most of the potential competitors create their own programs, yet none of them are actually active in the field of "assembling". For this reason, they are not all located directly along the line from "matching" to "knowledge management", but on the surface of the graphic. This means that they do have a small share in the assembling sector, but none of the potential competitors can actually be located entirely or mainly in the lower left corner of the graph, in pure assembling.

5.2 Limitations & Delimitations

Since the classification of identified potential competitors in the discussion of the competition analysis is carried out in a normative manner, it is impossible to make a scientifically verifiable, general claim to validity. Furthermore, the potential competitors identified by the author cannot be claimed to be complete. They only represent a snapshot at the time of the study.

However, since the IT sector in particular is very fast-moving and new IT company spin-offs are constantly happening, new potential competitors may already have emerged on the market at the time of printing this work. Another caveat of this thesis are the procedures of information gathering for the purpose of competitor analysis. As this is a case study, the same rules on the scientific validity of sources cannot be followed in the information gathering process, as all information, regardless of its validity, must be considered potentially valuable. Particularly in the area of information procurement in the IT company sector, it is usually difficult. Within the scope of this analysis, a comparable, clear arrangement of a service portfolio was a challenge in some cases. The presentation or depiction of a revenue model in such a way that it also becomes accessible to persons potentially unfamiliar with the subject matter turned out to be even more difficult.

Another factor that makes it difficult to standardize or uniformly present potential competitors is the sometimes completely different view of the topic of licensing and the approach to licensing issues. This means that within the competitors, a distinction had to be made first and foremost to the understanding of licensing. However, it can be deduced from the partly completely different approaches of the identified, potential competitors that the market that DALICC is trying to enter is still much segmented and barely developed (if not partly untapped) in this particular sector. However, there is a need for a service that DALICC seeks to offer.

Up to now, the topic of licensing has always been highly specialized and focused on a narrow core area, according to the individual competitors. To clarify once again to what extent the term "focused" applies, here is yet another short overview: PLUS deals with licensing law regarding image data, CCC deals (mostly as broker) with licensing law regarding copyright, Fossa with Open Source Compliance etc...

A further concession must be made in the area of linking a precisely elaborated, albeit relatively new theoretical basis in connection with the real situation in the competitive analysis:

The theoretical framework of Service Science as well as that of Economics of Platforms is in some ways helpful when considering potential competitors, but in others difficult to implement, since some of them are companies that provide consulting services and others are web service applications or even non-profit consortia. It is complicated and potentially error-prone to apply

the common framework of theory to these competitors, who are similar in basis but very different in detail. In the context of a competitive analysis for the purpose of further developing and recommending a business model for DALICC, however, it is necessary to include all information relevant for an economic decision into the analysis.

The triangle shown in figure 5 for comparing Brousseau's and Penard's digital business models is ideally suited at this point to simplify the aforementioned complexity through a normative framework and to make the competitors comparable with each other. The trade-offs between the individual business models mentioned in chapter 2.2.2.4 need not be mentioned here again, as they would only unnecessarily contribute to increasing complexity without, however, making a direct contribution to better comparability.

6 Recommendation for DALICC's Business Model

At this point scenarios of possible business model outcomes for DALICC are predicted on the basis of the previous competitive analysis (service portfolio, value creation, and revenue model), the theoretical framework and the Business Model Canvas. Although the concept of
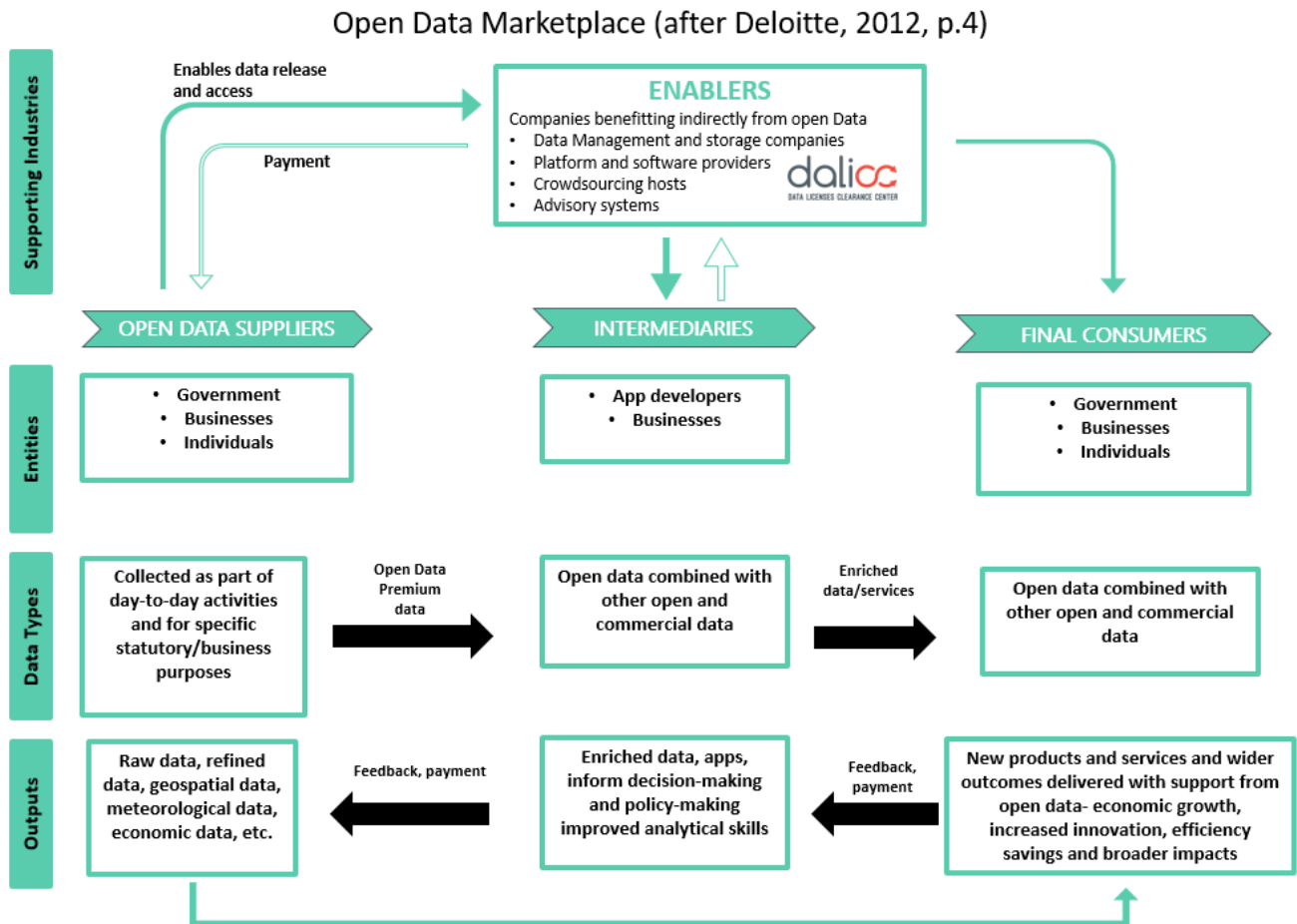
Fig. 7: Open Data Marketplace- own graphic based on Deloitte (Deloitte, 2012, p.4)

intermediaries at Brousseau and Penard is particularly relevant in the area of matching and DALICC can best be located in the area of knowledge management according to Chapter 5, it is, however, still an intermediary in terms of its business model. According to Deloitte, there is yet a fourth participant to be found, alongside suppliers, intermediaries and end consumers. According to figure 7, DALICC, as shown, would thus be an "enabling service".

Whether DALICC can now be classified as an intermediary or enabling service depends to a large extent on whether the services offered by DALICC in the area of licensing are made available as a web service application or as an app when referring to Deloitte (see Figure 7). Although this graphic is based on Open Data, it is very applicable to DALICC from the point of view of intermediaries and enabling services (see Figure 7). As things stand at present, where

DALICC was programmed mainly in the sense of a Web service application, it is most likely an "advisory system" and thus an enabling service.

Application of the Business Model Canvas to DALICC through various scenarios:

At the beginning the respective situation of each scenario is described, which is derived from the knowledge gained in the theoretical part and the analysis of the competition. Then an individual business model canvas for each individual scenario is developed according to the formulated initial situation.

6.1 Scenario 1

In this scenario, we assume that DALICC sees itself as a pure enabling service, i.e. providing its service via a web service application. This eliminates a lot of additional programming work, since the basic functions of DALICCs are already implemented as a web application service.

6.1.1 Business Model Canvas 1:

6.1.1.1 Customer Segments

Since even in a scenario in which DALICC operates purely as an enabler providing a service for intermediaries on a multi-sided market, the customer segments are still multi-sided.

Primarily there are different groups of customers who are interested in the services provided by DALICC:

- Young entrepreneurs who want to gain basic information and knowledge in the field of licenses in order to save time and money when hiring a license lawyer or law firm;
- Licensing lawyers who, with the help of DALICC, save paperwork and time that would otherwise arise when manually clarifying individual licensing issues;
- Companies who want to test custom licenses for their applicability, before they have to pass them on to a licensing law firm and pay according royalties for them.

6.1.1.2 Value Proposition

"The Value Proposition is an aggregation, or bundle, of benefits that a company offers [its] customers" (Osterwalder/Pigneur/Clark, 2010, p. 15). With its range of services, DALICC creates a completely new opportunity for companies, young entrepreneurs and legal experts to make complex licensing issues accessible in an automated, simple and comprehensible manner. In addition, the services offered by DALICC provide a certain basic level of security, although legal certainty cannot be guaranteed ad hoc. However, if you are just a young

entrepreneur and want to set up a new company, start up a new business, or develop a new product that is potentially made up in part of derivative works, you can save legal fees ex ante. This does not mean that DALICC replaces extensive legal advice from lawyers trained in licensing law, but merely that those experts can be specifically informed of possible and already automatically identified licensing conflicts.

The License Library allows customers to learn about standard licenses that already exist and then select them for their own product. The License Composer allows you to create custom licenses according to your own preferences. The License Negotiator, in turn, allows customers to identify potential conflicts between two or more licenses. The License Annotator enables machine-readable linking of licenses to data sets. The latter makes it possible to automatically detect elsewhere which license potentially protects a data set and then transmit this information in human-readable language. In this way, potential licensing conflicts can be avoided in anticipation in the future.

Because DALICC is available as a Web Service Application, it enables the customer to be used ubiquitously, provided he has the necessary access to the platform (i.e. provided he is a registered customer with username and password). The implementation of DALICC in this form also means that the customer does not have to perform any computing processes on his own devices or install any programs, as he can outsource the entire computing power to external servers.

In short and concise terms, DALICC's value proposition consists of cost reduction, risk minimization, ease of use, novelty (such services are still available in small numbers and none cover exactly the same area as DALICC) and convenience.

6.1.1.3 Channels

The customer touch points at DALICC or the way in which the service/company draws attention to itself are difficult to design because it is a niche product or service. The customers who need DALICC have very specific requirements and ideas about the type of service in the area of license clearing. Certainly one can also advertise IT or legal advice topics on social media, but it is questionable whether the desired target group is reached through that particular measure. Presence on search engines like Google is an important factor for DALICC - in this respect SEO (Search Engine Optimization) is also an important cornerstone for reaching potential customers. With keywords such as "licensing", "license clearance", "automated license clearance", etc., DALICC must always appear on the first page of the Google search so that potential customers actually become aware of the service. DALICC's current presence at trade

conferences and the awarding of various prizes are logically also valuable as an advertising measure and an opportunity to reach future customers and interested parties.

All these are ways to gain customers' awareness. However, it is also necessary to determine to what extent DALICC's services can potentially be evaluated by customers.

This would have to be carried out via free trial accesses, which expire after a certain period of time. In order to provide customers with general access to DALICC, however, some functions could generally be made available free of charge in a limited form (for example, also via the limited number of uses) and all other functions via the subscription model for a monthly fee.

6.1.1.4 Customer Relationships

The service provided by DALICCs is in principle automated, which primarily excludes direct interaction with the customer. However, as the service is to be continuously improved and it may be advisable to respond to customer requests if they contribute to such an improvement, indirect channels must be used to build customer relationship management.

Since DALICC is a web-based service, it is also possible, by implementing a suitable CRM (Customer Relationship Management) tool, to respond to customer requests and inquiries in a more extensive form, to collect usage data to improve the service and to continue looking after customers in the sense of after-sales management.

If co-creation or prosuming behavior is desired, it is also possible to carry out or initiate this via message boards, FAQ sections, chats for registered members and customers or predefined contact forms.

6.1.1.5 Revenue Streams

A web based application such as DALICC offers different possibilities as a source of income. For example, the use of all services can be free from the beginning, up to a certain number of uses. If the certain number of users is exceeded, the user is then requested to pay via a paywall.

Another possibility would be a subscription model in which users have to register right from the start and pay a monthly fee in order to access DALICC's functions.

Fossa, for example, allows free use of its services in the area of basic functions and all extended functions must then be paid per user. This means that each user within the payment model is equipped with a kind of individual, time-dependent license, which is renewed under certain conditions or expires at some point. This would also be a possible source of income,

although it would be more appropriate if users had to install programs or parts of programs locally to use DALICC.

Since the services offered are an entirely special area, namely automated license consulting, the consideration of possible financing through advertising must be rejected. The customer base interested in this type of offer is a potentially very complicated and diffuse target group for advertising partners and for this reason potential advertising space would be rather difficult to sell.

6.1.1.6   Key Resources

DALICC's key resources consist of two basic cornerstones: on the one hand, the programming services offered, i.e. the programmers who enable this project to be implemented at a technical level and, on the other hand, the legal expertise of the licensing-law firm that cooperates with DALICC. These two pillars make it possible for DALICC to offer the services it offers in a quality that the market needs and demands.

In order to operate successfully and maintain its value proposition, the company needs good programmers who can guarantee the simplicity of use and provide customers with a maximum of convenience in using the services. However, the validity of the legal information must also be guaranteed, even though DALICC can never guarantee its users complete legal certainty for reasons of its own legal protection. For this reason, good relations must also be maintained with legal experts who are familiar with this area and who also remain reliable partners in the long term.

6.1.1.7   Key Activities

As a key activity of DALICC in the sense of a web service application, continuous maintenance and improvement of the functioning of all individual services are paramount. In addition, it may be necessary to add new and popular licenses to the License Library and to expand it continuously. But also DALICC's compatibility with other services, the possibility of developing APIs (i.e. interfaces to other programs) as well as the constant drive for all-round improvement is necessary to be and remain marketable.

In order to ensure legal validity, as already mentioned in the key resources, it will be necessary to hold continuous meetings with partners in the law firm or to have a permanent contact partner in that office.

If the expansion of the web service application to a full-fledged platform (in the event of disproportionately strong demand from the market) is under consideration, "platform

management, service provisioning and platform promotion" (Osterwalder/Pigneur/Clark, 2010, p. 37) will also have to become necessary key activities.

6.1.1.8 Key Partners

The most important key partners for DALICC are in any case the law firm with which the company already cooperates: Höhne, In der Maur & Partner Rechtsanwälte GmbH & Co KG in Vienna. It is one of the most important cornerstones of DALICC's legal tech/ legal advisory service activities. Without the legal expertise of lawyers trained in licensing law, DALICC would only be a second-rate service.

In the area of licensing law in particular, however, it is a question of reducing risk and creating relative legal certainty. However, this can only be guaranteed if the necessary personnel or partners are at hand.

6.1.1.9 Cost Structure

DALICC's cost structure is based on two pillars: maintenance and support in the technical sector by programmers or IT specialists, and in the legal sector by the partners in the law firm, which specializes in licensing law. This structure is cost driven in that DALICC is a legal tech start-up with a focus on maximum usability, service convenience which strives to provide clients with price advantages over conventional legal advice.

For this reason, the company has to position itself with the leanest possible cost structure in order to be economically profitable, simply because of the unavoidable fixed costs in the area of programmers and legal experts. However, since the services offered by DALICC are all automated and usable, costs can be saved, at least in this area. However, costs can hardly be reduced in the areas of maintenance, constant expansion of services, customer service and possible legal consultations with legal advice partners.

However, a further factor that accommodates the lean cost structure is the implementation as a web service application. Since most of the programming has already been completed and no further development of the services offered as an app is imminent in this scenario (which would potentially be very cost-intensive), costs can also be saved here.

6.1.2 SWOT

In this SWOT-analysis, the strengths, weaknesses, potential opportunities and threats of the individual points proposed and identified within the business model canvas are summarized in a few sentences to provide a better overview or a kind of conclusion of the individual scenarios.

However, here the strengths and weaknesses will not be compared with the opportunities and threats as usual, as this can, on the one hand, already be deduced within the individual scenario analyses. On the other hand, in the final chapter, the individual scenarios are summarized and compared once again, making a comparison of strengths, weaknesses, opportunities and threats superfluous at this point. The same applies to all further SWOT analyses of the remaining 3 scenarios.

6.1.2.1 *Strengths*

The strengths of the DALICC option to be brought to the market purely as a web service application are to be located above all in the cost structure. The services can be tried out and tested by potential customers in this way without costing DALICC more in development. The basic functions are already developed and function perfectly. This would also make it relatively easy to collect data on the use of individual services for further extension and improvement.

6.1.2.2 *Weaknesses*

The weaknesses resulting from DALICC's market entry as a web service application are the possibility of not being able to act directly as an intermediary. As a web service application, DALICC is always an enabling service, which is by no means to be understood negatively. However, the possibility of making the leap to intermediary through its own app would also mean growth for DALICC, assuming the case that the demand for the services offered is sizable.

Another potential weakness is that DALICC, as a small start-up, does not yet have the financial means to enter the US market directly or to become economically dangerous to the potential US- competitors identified in this thesis. This means that DALICC might not be able to compete with competitors like for example Fossa.

The commitment to one single partner in the field of legal advice results from the fact that they are specialists in this very field throughout Europe. This can also potentially be defined as a weak position, but so far there is no sensible alternative to this situation.

6.1.2.3 Opportunities

What was listed as the last point under weaknesses can also be understood as an opportunity in this area: namely the partnership with a law firm which is particularly well acquainted with the field of intellectual property. This can also give DALICC a competitive advantage.

But probably the biggest opportunity is the current boom in new business start-ups (The Economist, 2014). Since start-ups, whether in the IT sector or in the creation of physical products, always have to deal with licensing issues, DALICC offers the perfect platform to support such projects. Starting a business is expensive. If DALICC can reduce these costs and provide clients with sustainable legal advice, there is a whole range of new potential customers in waiting.

Another opportunity is the development of a good and solid customer relationship management for the purpose of constant improvement of services, as well as the collection of usage data which can also lead to the best possible establishment of DALICC's service portfolio.

6.1.2.4 Threats

The biggest difficulty that can be derived from this scenario is the implementation of income/revenue structures. As DALICC's service portfolio does not yet exist in Europe in this way, it may be difficult for customers or potential customers to evaluate in advance what the benefits will actually be. Therefore, a suitable revenue model has to be chosen right from the start, which makes it possible to test the functions, but still makes the company economically viable and, in the best case, soon successful.

Another potential threat is the still low profile of DALICC, as this is a very specific technical-legal area that may not be as publicly effective as a new sports tracking app, for example.

Here it is necessary in any case to implement the right marketing measures in order to gain awareness within the relevant target group.

6.1.3 Choice of Legal Form and Justification

In this case, it is advisable to establish a limited liability company in advance, as DALICC's financial resources are still manageable and its market entry will first and foremost take place on the European market and more precisely on the German-speaking market. Since all DALICC services and the entire structure are designed in English, it is also possible that the company will be operating successfully in English-speaking countries, more precisely the USA, virtually overnight. Especially in today's globalized world, with an English-language IT product

with high potential and demand for the services offered, it is possible that DALICC's legal form may also have to change comparatively quickly.

For this reason, it may make sense to keep open the possibility of converting DALICC into an SE (Societas Europaea) as demand develops. This is entirely possible since limited liability companies (GmbH) with their registered office and head office in a state within the European Economic Area may establish a holding SE (WKO a, 2018). This is only possible, though, if they are subject to the law of different member states or have had a subsidiary/branch office in another member state for at least two years and can put up a share capital of 120,000.00 Euro (WKO a, 2018).

A transformation into a US legal form is unlikely at this point in time and is therefore not considered in this paper. However, if this should one day become necessary, the necessary steps must be researched and taken specifically.

6.2 Scenario 2

In this second scenario, we assume that DALICC will establish itself as an app, i.e. move away from its implementation as a web application service. In this case, according to Deloitte, DALICC would no longer be a pure enabling service, but a fully-fledged intermediary in a two-way market (see figure 7).

6.2.1 Business Model Canvas 2:

6.2.1.1 Customer Segments

In this scenario, too, the customer segments consist of the following potential customers:

- Young entrepreneurs who want to gain basic information and knowledge in the field of licenses in order to save time and money when hiring a license lawyer or law firm;
- Licensing lawyers who, with the help of DALICC, save paperwork and time that would otherwise arise when manually clarifying individual licensing issues;
- Companies who want to test custom licenses for their applicability, before they have to pass them on to a licensing law firm and pay according royalties for them.

However, since in this scenario DALICC becomes both an intermediary and its own enabling service at once, it reduces potential costs in having to buy advisory services from an external enabling service and increases costs by developing an application and giving it the same functionalities as its web based origin. If one also speaks of a multi-sided market in this case,

this horizontal integration has nevertheless "struck a participant/potential competitor off the equation ".

6.2.1.2 Value Proposition

The value proposition in this scenario is fundamentally similar to scenario number 1, but in this scenario it is assumed that the conversion of DALICCs from pure enabler to intermediary by programming an app occurs, because economic success has already been achieved to the extent that programming the app is worthwhile.

This also presupposes that the programming of the app is done with the aim of acquiring new customers by means of e.g. higher convenience and/or usability.

Building DALICC's service portfolio into a web service application may make sense in the beginning, but as the customer base and related demand grows, an application can be used in a mobile manner with less effort and possibly greater user-friendliness.

Cost reduction, risk minimization, ease of use, novelty and convenience are still key parts of the value proposition in this scenario, with the only exception of better usability through the app structure.

6.2.1.3 Channels

In this scenario, too, DALICC is still a niche product. However, since sufficient economic success and a demand that is high enough to consider programming an app has already set in, an increased degree of publicity can also be assumed here than in scenario 1.

Here too, due to the nature of the product or service, it is necessary to continue to be present at trade fairs and similar events. At this point, testimonials from already satisfied customers can also be helpful to gain familiarity with new potential customers.

Another way to gain recognition is to create free trial versions or to equip the app with a predefined number of free uses, where the full version must be purchased from a certain point on.

Furthermore, DALIC can use the basic structure of two-sided markets to generate feedback, which in turn creates better outcomes for all parties involved in accordance with the homo socialis model (see 2.2.2.1 Matching).

6.2.1.4 Customer Relationships

The app would offer exactly the same possibilities (as in scenario 1) to set up an adequate CRM system in connection with the services provided in the app. This could in turn be used to identify customer needs in good time via usage data and feedback and then implement them adequately.

6.2.1.5 Revenue Streams

In the area of revenue sources, as already mentioned in "channels", it would also be a good idea either to create a free trial version of the app that locks itself after a certain number of applications, or to provide the standard app with this function.

From a predefined number of uses, the customer would then be asked to switch to the payment version and download it or activate it by registering with name and credit card data. In this case, either the app is paid once and is provided with a kind of usage period, or is to be paid monthly. Financing via advertising within the app structure is categorically excluded, since it does not fit the user group and gives the service a qualitatively inferior touch.

6.2.1.6 Key Resources

The key resources, as in Scenario 1, are the programming services and the programmers who are responsible for the basic structure and functioning of the service as well as the business partners in the law firm, who provide the legal expertise through their specialization in the field of intellectual property rights.

6.2.1.7 Key Activities

The key activities in this scenario are also the continuous maintenance and improvement of services, in this case the services within the app. Also the extension of the functions of the app are necessary activities to maintain marketability. The application structure allows a multitude of new combination and expansion possibilities, especially in the field of mobile use. But the keys to successful implementation are above all usability and convenience.

Legal validity remains as highly important as in Scenario 1, meaning DALICC needs to constantly uphold its high standards in terms of legal certainty. This in turn may mean onboarding by legal specialists or attorneys trained in licensing law.

Depending on whether the programmers who have already programmed the web service application also subsequently program, create and maintain the app or this is done by external service providers, the key activities of DALICC also change.

6.2.1.8 Key Partners

The key partners in this scenario remain the same as in scenario 1, that is the law firm Höhne, In der Maur & Partner Rechtsanwälte GmbH & Co KG in Vienna. If the app is created by existing programmers, the only external key partners will remain with said law firm. However, if external programming services are used, these may also develop into new key partners. This could be an external app developer company, for example.

6.2.1.9 Cost Structure

In this scenario, the cost structure of DALICC as an app depends on the costs of operating, maintaining, extending and improving the application, including the running costs for the partners in the law firm. Depending on whether the technical support is still carried out by in-house staff or subcontracted to external companies, the ongoing costs also develop or potentially increase in this area. Regardless of whether the programming is done in-house or outsourced, the costs increase rapidly compared to scenario 1, the web service application. As most services are still automated even by means of an application, cost structures can be streamlined, at least in this area, in so far as it does not require its own personnel for direct legal advice.

6.2.2 SWOT
The same criteria apply to the implementation of this SWOT as already described in Scenario 1.

6.2.2.1 Strengths

The strengths of DALICC as an intermediary offering its services via an application are the numerous possibilities for adaptation and expansion resulting from this form. In addition, the implementation of the license clarification services in an app also enables mobile use of DALICC and thus enables a large number of possible returning feedback data, which can be used to improve the service. This means that an app can also be easily linked to an internal company CRM system thus improving customer relationship and customer experience.

6.2.2.2 Weaknesses

The main weaknesses of this scenario are the higher cost structures resulting from app development. Regardless of whether the application is programmed and developed in-house or externally, this costs more than using DALICC purely (as in scenario 1) in the sense of a web service application.

Should the decision be made that, due to a growth in demand, legal experts at DALICC will be hired as part of the team, this will lead to increased costs on the one hand, but the current partnership with the Vienna law firm may also be threatened. At this point, it is important to carefully consider and calculate the actual cost difference that would result in. In the status quo, DALICC is still a pure web service application and not yet equipped with enough capital to consider these issues. In the event that scenario 2 becomes compelling, however, these considerations are very relevant.

6.2.2.3 Opportunities

One key opportunity for DALICC in this scenario is that as a pure intermediary, if it has the opportunity to be the only available provider at a certain point in time, it can exploit the "competitive bottleneck effect" for itself (see 2.2.2.1 Matching). This could give DALICC a quasi-monopoly position and by also internalizing the services of an otherwise external enabling service, this dominant position would be strengthened even more.

Since intermediaries can use the feedback they get from the two-sided markets for themselves, they can use it to provide "better outcomes for all parties involved". (see 2.2.2.1 Matching).

6.2.2.4 Threats

A possible threat is the acceptance of the app within the DALICC user community. It is quite possible that the app structure is not accepted or used at all.

If usability and convenience outweigh the web service application, it is quite possible that the app is successful. At this point in time, however, it is not clear whether mobile use is actually a relevant criterion for potential customers.

6.2.3 Choice of Legal Form and Justification

In this scenario, it makes sense to establish a limited liability company (GmbH) similar to scenario 1 and, once the criteria for the formation of an SE (Societas Europaea) have been met, to change its legal form into this one.

The reason for this is the simpler possibility to establish in other member countries of the European Economic Area as well as the possibility to combine all business in one holding company and to establish subsidiaries with European-wide standards if necessary (WKO a, 2018).

6.3 Scenario 3

In the third scenario, we assume that DALICC will expand its product portfolio even more in the direction of "matching" and place a stronger focus on its community and involve it more closely in the value creation process. This increased involvement of the community or the user as co-creator or prosumer is derived from the insights gained in the Economics of Platforms regarding homo socialis and the insights gained in relation to prosuming through Service Science.

6.3.1 Business Model Canvas 3:

6.3.1.1 Customer Segments

In the following scenario, the same customer segments apply as in the two previous scenarios:

- Young entrepreneurs who want to gain basic information and knowledge in the field of licenses in order to save time and money when hiring a license lawyer or law firm;
- Licensing lawyers who, with the help of DALICC, save paperwork and time that would otherwise arise when manually clarifying individual licensing issues;
- Companies who want to test custom licenses for their applicability, before they have to pass them on to a licensing law firm and pay according royalties for them.

The only difference is that the last group described in the customer segments finds more weight in this scenario, which is due to the fact that the community aspect is in the spotlight.

6.3.1.2 Value Proposition

The value proposition in this scenario is also fundamentally similar to scenario number 1, but with a stronger emphasis on community participation and therefore "prosumption".

The possibility of a community that is involved with feedback in the design of licenses is already possible at the present time, but is by no means the focus of DALICC's range of services. Other competitors such as TLDR Legal and PLUS have a very strong focus on community and community contribution and their service portfolio is based on this. For this reason, this scenario aims to transfer these learnings from the competition into one's own offer.

Cost reduction, risk minimization, ease of use, novelty and convenience are also still key parts of the value proposition in this scenario, with the only addition of a customization aspect, due to the involvement of the community.

6.3.1.3 Channels

For this scenario, all the points already mentioned in scenario 1 apply to the Channels section. However, there is another channel for reaching other potential customers: the opportunity to participate in the community and thus contribute to the common good of all users. This is interesting both for individual experts and for companies who want to obtain expert opinions in advance without having to pay horrendous sums for basic legal advice.

6.3.1.4 Customer Relationships

The same applies here as for scenario 1, although with the addition that customer relationships can be greatly improved through community participation. As already shown in chapter 2.2.1, the most successful platforms such as Google or Amazon both significantly involve their customers in shaping their services. If the customer or consumer thus becomes part of the service offered, other customers, but also the provider, will benefit.

6.3.1.5 Revenue Streams

Compared to scenario 1, it is primarily not possible to find new revenue streams here as they are still pretty much the same as in scenario 1.

Both of the above-mentioned competitors (TLDR Legal and PLUS) who include their communities in their services have not linked adequate revenue models to this type of consumer contribution (or prosumption). It can be argued that the involvement of the community or the customers in the value creation process does not generate direct income, but merely improves the service for all participants. In this case, however, this would still attract new potential customers and would therefore not be purely for an altruistic purpose.

Taking this into account, there is also the possibility to promote such contributions (in the sense of prosuming), as these in turn can lead to innovation processes, which can prove beneficial for the company. To this end, a reward system must be implemented that in some way rewards users who make valuable contributions.

6.3.1.6 Key Resources

The key resources, as in Scenario 1, are also the programming services, programmers as well as the business partners in the Viennese law firm.

In this scenario, however, in addition to the two, customers and the community can also be described as key resources. Because the community has such an important position in this scenario in terms of co-creation or prosuming, it must also be brought into focus at this point.

6.3.1.7 Key Activities

The key activities in this scenario also consist of continuous maintenance and improvement of the functioning of all individual services, the expansion of the License Library, DALICC's compatibility with other services etc., like in scenario 1.

In addition to maintaining relationships with the key partners in the law firm described above, the emphasis is also on maintaining relationships with those customers who are contributing to value creation.

6.3.1.8 Key Partners

The key partners in this scenario are also the DALICC team (all employees included), all programmers, the law firm specializing in intellectual property and the clients who participate in the value creation process through community participation.

6.3.1.9 Cost Structure

The cost structure in this scenario is similar to scenario 1, although there may be small costs to implement structures such as chat rooms, rating systems and other measures to promote community activity. Depending on the complexity of the respective measures, the price of the programming services is determined, whether performed internally or externally.

In principle, however, the costs should remain within manageable limits compared to scenario 2, the app.

6.3.2 SWOT

The same criteria apply to the implementation of this SWOT as already described in Scenario 1.

6.3.2.1 *Strengths*

The comparatively low cost of implementing greater community involvement encourages innovation and attracts new potential customers as a result of the all-round improvement in DALICC's service offering (see chapter 1.1.3).

As already stated in chapter 2.2.1, systems that allow cooperation between individual users can accelerate innovation. (Helbing, 2013, p. 28). On the basis of this observation, a relatively low programming effort may have disproportionately positive effects for DALICC.

6.3.2.2 *Weaknesses*

One weakness of this scenario is that it is based purely on theoretical principles that may work or have already worked for other companies, but do not necessarily have to work for DALICC. This means that there is still no data or directly comparable participants in which this could be closely observed. In the competition analysis, competitors were basically identified who use these community or prosuming aspects for themselves, but how they are assumed by their customers remains unknown.

6.3.2.3 *Opportunities*

The main opportunity in this scenario is to create an optimized service for all parties by involving customers in the value creation process and also to accelerate innovation and to continuously improve DALICC independently with the help of the implemented feedback loops.

6.3.2.4 *Threats*

In any case, it is necessary to give only paying and registered customers the opportunity to participate in the design of parts of DALICC's service offer. A ranking or hierarchy of co-designing customers or prosumers could also be created here, which prevents these processes from running in an uncontrolled manner.

Nevertheless, despite these measures, there is still uncertainty as to whether this form of co-creation is actually used sufficiently to justify the additional programming effort required for the implementation of such basic community participation structures.

In the worst case, the infrastructures to enable the community to participate in the value creation process are created, but not at all embraced by customers or the community.

6.3.3 Choice of Legal Form and Justification

In this scenario the choice of legal form is identical to the one in Scenario 1.

6.4 Scenario 4

In the fourth scenario, we assume that DALICC will add Real Time License Clearing to its current service portfolio. The aim is to be able to compete with potential competitors such as Fossa. The competitor Fossa is still comparatively small, has not yet established itself on the European market and is only just beginning to gain a foothold on the US market. DALICC would basically have the necessary framework conditions to also enter this segment and to expand its service portfolio in the area of licensing in this area.

6.4.1 Business Model Canvas 4

6.4.1.1 Customer Segments

In this scenario, the customer segments of scenario 1 are taken over but extended to a new, potential customer base: programmers or software developers. Like Fossa, which offers "real-time license vulnerability management", DALICC is trying to expand its service portfolio in this segment.

6.4.1.2 Value Proposition

The idea is that potential license conflicts can be tracked in the background during the programming process and the responsible person is made aware of them in real time. The advantage of this approach over the services offered by DALICC to date is that it is not necessary to clarify licensing issues ex ante or ex post, but it can be done directly during the programming process.

This would make DALICC's service offering more attractive to customers who can choose how they want to deal with licensing issues. The functions offered to date are sufficient to clarify licensing issues for physical or digital derivative products. When it comes to programming performance, however, it is possible that the derivative works or data sets may appear small or insignificant in such a way that they are not checked for compatibility in advance. In this case, real time license clearing would actually bring a significant advantage.

6.4.1.3 Channels

DALICC's process of contacting its (potential) customers is still the same as in Scenario 1, but the customer base has expanded to include another segment, meaning that events in which programming, software development etc. are in the foreground also need to be visited more frequently, unless this has been the case before. For the new service, the Real Time License Tracking, a possibility for a free trial version must also be created to give potential customers the possibility to evaluate the product or service ex ante.

6.4.1.4 Customer Relationships

The same basic elements of customer relationship management, such as the implementation of a CRM tool, also apply in this scenario. However, since the new Real Time License Tracking service also runs in an automated manner, there is no direct, continuous and personal contact to the customer, with the exception of after sales management, improvements based on feedback gained from CRM and potential inquiries.

6.4.1.5 Revenue Streams

The customer segments acquired through the new service provide additional revenue streams in addition to those already mentioned in Scenario 1. With the Real Time License Tracking service, DALICC can cover the entire range of license clearing, making it the most versatile provider in this segment (provided it can deliver the same or better performance than its competitors). As with the other services, the new subscription model would offer an initial free trial period or a certain number of free uses. Of course, one can also consider whether to do it like Aspera, for example, and provide a free demo version after the customer has contacted their own sales team.

6.4.1.6 Key Resources

The key resources in this scenario are also the same as in scenario 1, i.e. the programmers, all DALICC employees, and the partners in the law firm. In this scenario, however, due to the extended service portfolio, even greater emphasis is placed on the programmers, who must create a smooth and flawless system, which nevertheless performs in the same way or better than the other services offered by DALICC.

6.4.1.7 Key Activities

The key activities in this scenario also include the continuous maintenance, expansion and improvement of all services offered by DALICC, in particular the new Real Time License Tracking service. Since this service in particular offers a completely new way of operation compared to the services available to date, it requires particularly meticulous maintenance in order to ensure continuous, frictionless operation.

6.4.1.8 Key Partners

The key partners remain the same in this scenario as in scenario 1 and are also mentioned in this scenario under the heading Key Resources. The only possible novelty in this field could be new programmers or external service providers, who take care of the programming, realization and implementation of the new Real Time License Tracking Service.

6.4.1.9 Cost Structure

As mentioned in the previous section (key partners), the new service will also incur additional costs for DALICC. However, depending on whether the programming and implementation services would be provided by external service providers or by DALICC itself, the costs would also be affected. Nevertheless, even if the company decides to implement the new service itself, DALICC would have to hire additional staff to handle the additional work that has been added.

6.4.2 SWOT
The same criteria apply to the implementation of this SWOT as already described in Scenario 1.

6.4.2.1 Strengths

The strengths of this scenario are that if DALICC were to offer the additional real time license clearing service described above, it would be the only provider in this segment with such a broad service portfolio. With this broad range of services, DALICC could then also enter the US market, provided the performance of its services is as good if not better than that of its competitors.

6.4.2.2 Weaknesses

The weaknesses of these scenarios lie on the one hand in the additional costs, the extended programming service, as well as the uncertainty whether the one additionally offered service does not lessen the entire remaining service portfolio.

6.4.2.3 Opportunities

As an opportunity in this scenario there is the possibility to compete directly with suppliers like Fossa and to exploit the market with DALICC's own, extended product/service portfolio. Since no competitor could be found in the competitor analysis that offered exactly the same services as DALICC, the one possibility would be to potentially achieve market dominance.

6.4.2.4 Threats

One potential threat in this particular scenario is that entering a new and potentially unknown market such as the one in the USA is always associated with high risks. On the one hand this means high costs in order to enter the market and on the other hand the potential direct competitor Fossa is partially already established in the market. In addition, Fossa has its headquarters directly in San Francisco and is already at the gateway to Silicon Valley. These are circumstances that do not make market entry impossible, but nevertheless potentially dangerous.

6.4.3 Choice of Legal Form and Justification

There are two possible first approaches to choosing the legal form in this case: either DALICC establishes itself as a limited liability company (GmbH) in Austria and then registers a company in the USA or it goes the way described in scenario 1 from the limited liability company (GmbH) to the SE and then registers a company in the USA. As each state in the USA has its own company law, the regulations may vary in detail, so it is important to consider where the establishment of DALICC should take place (WKO b, 2018). It is possible to set up a company in the form of a letterbox company Delaware, as some competitors such as TDLR Legal have done, and still establish a head office elsewhere in the USA (Delaware.gov, n.d.). This would in any case be a possibility to save taxes and still establish a legal tech company close to Silicon Valley in order not to lose the connection to competitors like Fossa.

Before the foundation there is the possibility to make use of the support program of the Austrian Federal Economic Chamber for the foundation of a branch abroad and to get separate advice regarding the legal form as well as other related legal subtleties (WKO b, 2018).

For reasons of protection (meaning limited liability) solely, however, it is advisable to establish a corporation instead of a partnership. In contrast to Austrian company law, US law does not distinguish between an AG and a GmbH, so a corporation in any case offers limited liability, which is generally limited to deposits (Päffgen, 2014). Since the legislative competence is also with the respective federal state (in this case Delaware), the formation of a corporation (Inc.) is the advisable option for DALICC in this case.

7 Conclusion and Outlook

The aim of this thesis was to find out in what form DALICC, an automated licensing service still under construction, which is to be founded as a company in autumn 2018, can be cast into an economically efficient business model. For this purpose, the theoretical foundations on which digital business models operating in the same area as DALICC were analyzed in more detail. The two theoretical pillars of this thesis were Service Science on the one hand and the Economics of Platforms on the other, from which useful frameworks for the comparison and understanding of digital business models could be derived. On this basis, seven potential competitors were identified by means of internet research, who also deal with the area of licensing or license clarification. To this end, a framework was developed beforehand to enable the partly very different providers to be compared with each other in such a way that valuable findings could be derived for DALICC. This framework consisted of three key components according to which the potential competitors were analyzed: the service portfolio, the form of value creation and the revenue model.

The summary of the trends identified in the competition analysis and some competitors' individual understandings of what license clearing entails were then dealt with in Chapter 5, the discussion. An analysis tool developed by Brousseau and Penard from the theoretical part was then used to derive useful results for DALICC's business model.

All competitors were classified in a normative way in order to give an overview of the diversity of the individual providers and to define to what extent they actually appeal to similar customer groups such as DALICC.

On the one hand, it became clear that there are two basic views of license clearance within the seven identified competitors: one group was entitled "vendor specific" and the other "vendor neutral". The "vendor specific" group is committed to providing consulting services and tools for internal license management. This means they try to give their customers a way to manage all internally used software programs, which are all potentially provided with licenses. This management consists primarily of recognizing how many individual or collective licenses

of certain programs a company needs, how many of them it has purchased and possibly still has in stock and at what time they possibly expire.

The group of "vendor neutral" competitors deals with potentially any form of license in the field in which they specialize. PLUS for example specializes in image licenses and CCC is mainly in copyright issues. TDLR Legal, Licentia Inria or DALICC on the other hand also allow the search for licenses which can be applied to either digital or physical products, hence potentially all kinds of licenses.

Subsequently, 4 scenarios were developed to recommend DALICC's business model by creating a business model canvas for each scenario. At the end of each scenario, a SWOT analysis was carried out and a suitable legal form was recommended. A SWOT analysis usually concludes by comparing strengths and weaknesses with opportunities and threats. In this thesis, these findings are brought together in the conclusion.

Several trends can be derived from the theoretical framework, which have become established through digital business models. The strongest identifiable trends were the integration of consumers into the value creation process, i.e. prosuming/prosumtion and considerations that originate from the homo socialis model. Interestingly, both are repeatedly applied in successful and existing digital businesses/ business models. In addition, the findings derived from the theoretical framework could always be recognized within the competitor analysis. The theoretical foundations could thus be proven to be true in two respects.

The scenarios are thus also based on the combined findings from theory and competitor analysis. Since the fundamental questions and problems arising from the theoretical framework and the competition analysis are reflected in all of the 4 scenarios, the summary of these four also offers an excellent conclusion for this thesis.

Scenario 1 is the one in which DALICC enters the market in its current form: as a web service application based in Austria. The costs would already be known in this scenario and be easily calculable. Since the basic functions have already been programmed, no additional programming is required in this scenario. With this fundamental position of strength, DALICC can also take advantage of the boom in new start-ups which all need legal advice in the licensing sector but may not have the necessary funding to hire a licensing lawyer. If the company succeeds in becoming successful through a lean cost structure in Austria and subsequently Europe, it will also necessarily become an increasing opponent for the competitors that are currently expanding on the US market. However, in order to maintain high service quality and thus be better than the competition on a functional basis, a suitable CRM tool is required that uses feedback data to identify potential weak points and react appropriately to customer needs.

In scenario 2, DALICC is evolving from a pure enabling service to a fully-fledged intermediary. This presupposes, however, that either sufficient economic success has already been achieved, so the company can afford this step, or that the company finds sponsors who believe in the transfer of the services offered by DALICC into an application. In addition, programming the available services into an app structure enables mobile use of DALICC. As there is no competitor who offers this yet, DALICC could become a pioneer in this segment by offering license clearing in app form and thus making it potentially suitable for portable use. In order to reduce the risk that the app may not be accepted by customers, which entails considerable economic risks, the usability and convenience offered by the app must outweigh those offered by the web service application.

In scenario 3, the community participation or prosuming-factor is emphasized more strongly, which, as already mentioned several times in this thesis, at best leads to more innovation (see 6.3 Scenario 3) and also attracts new potential customers through the improvement of the service by the community. In order to control the participative processes within the community to a certain extent and not let them get out of control, it may make sense to establish rating or hierarchy systems based on the value of the contributions at this stage. This preserves the quality of the service and also creates incentives for customers to contribute to the value creation.

In scenario 4, we assume that DALICC will borrow from its competitor Fossa's approach and offer real time license clearing as its fifth service. Real-time license clearing would allow software developers to identify potential licensing conflicts during the programming process. This would make the company the only one in the Automated License Clearing division with such a diverse service portfolio. Although this carries the risk that the previously offered services will be rendered obsolete, it may also be the key to market dominance first on the European and subsequently on the US market. The cost of developing this additional fifth service would be higher than in scenario 1, but could pay off in that DALICC's would then also be the market leader in this segment.

The four scenarios summarized here offer possible starting points for the further development of DALICC's business model. Referring to the theoretical framework as well as to the competitors identified in the competitive analysis and their approach, this thesis provides a solid basis for the further development of DALICC as a legal-tech company.

These four different scenarios highlight the confluence of the theoretical framework of this thesis, the competitive analysis and the considerations that arise within the business model canvas and the SWOT analysis.

It is difficult to give an outlook in this form, since this thesis is a case study that is carried out for the sole purpose of setting up a real company. This means that at this point it is not possible to state in the same way which other or expanded areas could still be scientifically investigated. What is possible, however, is to show other methods or areas that could have been explored. Within the framework of a doctoral thesis or joint project work, for example, it would be possible to develop even more possible scenarios.

In addition, instead of legal recommendations, legal bases for setting up a company under various conditions could indeed be defined in a multifaceted form. It would also have been possible to write a pure business plan for DALICC. However, this would have meant that some of the strategic options disclosed in this paper would have been lost and could not have been analyzed in sufficient form and then subsequently transferred into the company's own business model. To conduct the thesis in this manner gives DALICC more room for maneuver with regard to the interpretation of its own business model.

However, this thesis in itself should provide a sufficient basis for understanding which foundations have already been used for successful platforms, which measures potential competitors are taking for their own economic success and to what extent DALICC, as an automated license clearing service, can make these findings its own in order to become economically successful itself.

8 **References**

8.1 **Monographies:**

- Bieger, T., zu Knyphausen-Aufseß, D., & Krys, C. (eds.) (2011): Innovative Geschäftsmodelle: konzeptionelle Grundlagen, Gestaltungsfelder und unternehmerische Praxis. Academic network. Berlin Heidelberg, Springer.
- Borgman, C.L. (2015) Big data, little data, no data: scholarship in the networked world. Cambridge, Massachusetts, The MIT Press.
- Brügge, B., Harhoff, D., Picot, A., Creighton, O., et al. (2004) Open-Source-Software. [Online]. Berlin, Heidelberg, Springer Berlin Heidelberg. Available from: doi:10.1007/978-3-642-17024-9 [Accessed: 12 July 2018].
- Hefley, Bill (ed.) (2008) Service science, management and engineering: education for the 21st Century. Service science: research and innovation in the service economy. New York, NY, Springer US.
- McAfee, A. and Brynjolfsson, E. (2017). Machine, platform, crowd. New York: W.W. Norton & Company.
- Osterwalder, A., Pigneur, Y. & Clark, T. (2010) Business model generation: a handbook for visionaries, game changers, and challengers. Hoboken, NJ, Wiley.
- Reibnitz, U. von (1992) Szenario-Technik: Instrumente für die unternehmerische und persönliche Erfolgsplanung. 2. Aufl. Wiesbaden, Gabler.

8.2 **Anthology Articles:**

- Bill Hefley (ed.) (2008) Service science, management and engineering: education for the 21st Century. Service science: research and innovation in the service economy. New York, NY, Springer US.
- Friedrichsen, M., Grüblbauer, J. & Haric, P. (2015) Strategisches Management von Medienunternehmen. [Online]. Wiesbaden, Springer Fachmedien Wiesbaden. Available from: doi:10.1007/978-3-658-04385-8 [Accessed: 26 July 2018].
- Grote, Sven & Goyk, Rüdiger et al. (2018) Führungsinstrumente aus dem Silicon Valley: Konzepte und Kompetenzen. Berlin, Springer Gabler.
- Vargo/Lusch "A Service Logic for Service Science" in Hefley, Bill (ed.) (2008) Service science, management and engineering: education for the 21st Century. Service science: research and innovation in the service economy. New York, NY, Springer US, p. 82-88.
- Vargo/Lusch "The Service-Dominant Mindset" in Hefley, Bill (ed.) (2008) Service science, management and engineering: education for the 21st Century. Service science: research and innovation in the service economy. New York, NY, Springer US, p. 89-96

8.3 **Articles from scientific journals:**

- Brousseau, E. & Penard, T. (2007) The Economics of Digital Business Models: A Framework for Analyzing the Economics of Platforms. Review of Network Economics. [Online] 6 (2). Available from: doi:10.2202/1446-9022.1112 [Accessed: 30 June 2018].
- Karla, J. (2007) Implementierung von Regelkreisen in Geschäftsmodellen für Web 2.0-Publikumsdienste. HMD Praxis der Wirtschaftsinformatik. [Online] 44 (3), 17–26. Available from: doi:10.1007/BF03340283.
- Pellegrini, T. (2017). Supporting Automated License Clearance With The DALICC Framework – Datenlizenzierung unter netzökonomischen Bedingungen. IRIS 2017
- Roehring, Paul & Pring, Ben (2013). The Value of Signal (and the Cost of Noise)- The New Economics of Meaning-Making, London: Oxford Economics [Online] Available from: https://www.cognizant.com/InsightsWhitepapers/The-Value-of-Signal-and-the-Cost-of-Noise-The-New-Economics-of-Meaning-Making.pdf [Accessed: 30 June 2018]
- Böhme, E. and Müller, C. (2012). Price-Increasing Competition on Two-Sided Markets with Homogeneous Platforms. Journal of Industry, Competition and Trade, 13(4), pp.453-479.
- Buhl, H.U., Heinrich, B., Henneberger, M. & Krammer, A. (2008) Service Science. WIRTSCHAFTSINFORMATIK. [Online] 50 (1), 60–65. Available from: doi:10.1007/s11576-007-0011-z.
- de Grandbois, Y. (2013) The business of Service Science. Business Information Review. [Online] 30 (4), 204–209. Available from: doi:10.1177/0266382113518837.
- Ostrom, A.L., Bitner, M.J., Brown, S.W., Burkhard, K.A., et al. (2010) Moving Forward and Making a Difference: Research Priorities for the Science of Service. Journal of Service Research. [Online] 13 (1), 4–36. Available from: doi:10.1177/1094670509357611.
- Huo, J. & Hong, Z. (2013) The Rise of Service Science. In: Service Science in China. [Online]. Berlin, Heidelberg, Springer Berlin Heidelberg. pp. 39–68. Available from: doi:10.1007/978-3-642-34497-8_2 [Accessed: 25 July 2018].
- Helbing, D. (2013) Economics 2.0: The Natural Step Towards a Self-Regulating, Participatory Market Society. SSRN Electronic Journal. [Online] Available from: doi:10.2139/ssrn.2267697 [Accessed: 30 June 2018].

8.4 Online-Sources:

- AIMS (n.d.) LICENTIA: a web site to Choose the License for your Data | Agricultural Information Management Standards (AIMS). [Online]. Available from: http://aims.fao.org/activity/blog/licentia-web-site-choose-license-your-data [Accessed: 27 June 2018].
- Albanese, Andrew (2012) Publishers Appeal 'Flawed' Decision in GSU E-Reserves Case. [Online]. PublishersWeekly.com. Available from: https://www.publishersweekly.com/pw/by-topic/digital/copyright/article/53903-publishers-appeal-flawed-decision-in-gsu-e-reserves-case.html [Accessed: 20 June 2018].
- Anders, George (2016) Mozilla, With Revenue Up 28%, Maps An Ambitious Agenda. [Online]. Available from: https://www.forbes.com/sites/georgeanders/2016/12/01/mozilla-with-revenue-up-28-maps-an-ambitious-agenda/ [Accessed: 12 July 2018].
- Anon (2018) Copyright Clearance Center. Wikipedia. [Online]. Available from: https://en.wikipedia.org/w/index.php?title=Copyright_Clearance_Center&oldid=841098347 [Accessed: 10 June 2018].
- Aspera a (n.d.) Lizenzmanagement als ganzheitliche Aufgabe. [Online]. Available from: https://www.aspera.com/de/strategisches-lizenzmanagement/strategic-sam/ [Accessed: 27 June 2018].
- Aspera b (n.d.) Aspera - Unser Profil. [Online]. Available from: https://www.aspera.com/de/unternehmen/ueber-aspera/unternehmensprofil-geschichte/ [Accessed: 27 June 2018].
- Aspera c (n.d.) Wissen ist Macht. [Online]. Available from: https://www.aspera.com/de/lizenzmanagement-beratung/consulting-services/ [Accessed: 27 June 2018].
- Aspera d (n.d.) Was ist Software Asset Management. [Online]. Available from: https://www.aspera.com/de/software-asset-management/einfuehrung/ [Accessed: 28 June 2018].
- Aspera e (n.d.) Termine. [Online]. Available from: https://www.aspera.com/de/sam-support/training-termine/ [Accessed: 28 June 2018].
- Bloomberg (n.d.) FOSSA, Inc.: Private Company Information - Bloomberg. [Online]. Available from: https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapid=380957488 [Accessed: 21 June 2018].
- Copyright Clearance Center (2015) Copyright & Licensing Experts | CCC. [Online]. 12 January 2015. Copyright Clearance Center. Available from: http://www.copyright.com/ [Accessed: 10 June 2018].
- Crunchbase (n.d.) FOSSA. [Online]. Crunchbase. Available from: https://www.crunchbase.com/organization/fossa-2 [Accessed: 21 June 2018].
- Delaware.gov (n.d.) Delaware Corporation and Business Entity Laws. Division of Corporations - State of Delaware. [Online]. Available from: https://corp.delaware.gov/delaw/ [Accessed: 31 August 2018].
- Deloitte (2012). Open growth. Stimulating demand for open data in the UK. [Online] Available from: http://www2.deloitte.com/content/dam/Deloitte/uk/Documents/deloitte-analytics/open-growth.pdf. [Accessed: 8 July 2018]
- European Commission a (2014). A European strategy on the data value chain. [Online] http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3488 Brussels, 2.7.2014, COM (2014) 442 final [Accessed: 8 July 2018].
- European Commission b (n.d.) 2018 reform of EU data protection rules [Online] https://ec.europa.eu/commission/priorities/justice-and-fundamental-rights/data-protection/2018-reform-eu-data-protection-rules_en [Accessed: 8 July 2018].
- FH St.Pölten Research Projects (n.d.) Fachhochschule Sankt Pölten- University of Applied Sciences Sankt Poelten, Research Projects [Online]. https://www.fhstp.ac.at/en/research/projects-1/dalicc-2013-data-licenses-clearance-center-1 [Accessed: 8 July 2018].
- FOSSA (n.d.): - Effortlessly comply with open source licenses. [Online]. Available from: https://fossa.io/ [Accessed: 21 June 2018].
- Fossology (n.d.) Features. FOSSology. [Online]. Available from: https://www.fossology.org/features/ [Accessed: 21 June 2018].
- Grösser, Stefan (n.d.) Definition: Geschäftsmodell. [Online]. Gabler Wirtschaftslexikon Online. Available from: https://wirtschaftslexikon.gabler.de/definition/geschaeftsmodell-52275 [Accessed: 20 July 2018].
- Hoovers (n.d.) Copyright Clearance Center, Inc. Company Profile | D&B Hoovers. [Online]. Available from: http://www.hoovers.com/company-information/cs/company-profile.html [Accessed: 10 June 2018].
- IDC & Open Evidence (2015). European Data Market. SMART 2013/0063. [Online] Available from:https://drive.google.com/a/open-evidence.com/file/d/0B5Co3wBffnzhUTBQUkICS0VoRTg/view?pref=2&pli=1. [Accessed: 8 July 2018]
- Inria 1 (n.d.) Inria in brief. [Online]. Inria. Available from: https://www.inria.fr/en/institute/inria-in-brief [Accessed: 24 June 2018].
- Inria 2 (n.d.) Inria – 2016 annual report – An eventful year! [Online]. Available from: https://panorama.inria.fr/en/ [Accessed: 24 June 2018].
- Lackes, Richard (n.d.) Definition: Open Source. [Online]. Gabler Wirtschaftslexikon Online. Available from: http://wirtschaftslexikon.gabler.de/definition/open-source-43032 [Accessed: 8 July 2018].

- Leymann, Frank (n.d.) Definition: Platform as a Service (PaaS). [Online]. Gabler Wirtschaftslexikon Online. Available from: https://wirtschaftslexikon.gabler.de/definition/platform-service-paas-53368 [Accessed: 20 July 2018].
- Licentia (n.d.) ÜBER UNS. [Online]. Licentia. Available from: http://licentia.de/ueber-uns/ [Accessed: 23 June 2018].
- Lincentia INRIA (n.d.) Licentia by INRIA. [Online]. Available from: http://licentia.inria.fr/ [Accessed: 24 June 2018].
- Murray, Alan (2018) Introducing the New Fortune 500 List. [Online]. Fortune. Available from: http://fortune.com/2018/05/21/fortune-500-companies-2018/ [Accessed: 8 July 2018].
- Päffgen, Corinna (2014) GTAI - Suche. [Online]. Available from: https://www.gtai.de/GTAI/Navigation/DE/Trade/Recht-Zoll/Wirtschafts-und-steuerrecht/suche,t=unternehmensgruendung-und-gewerbeanmeldung-in-usa,did=967902.html [Accessed: 25 July 2018].
- PLUS a (2018): „PLUS". https://www.useplus.com/aboutplus/system.asp. Zugegriffen 9. Mai 2018.
- PLUS b (2018) :: PLUS :: License Generator. [Online]. Available from: https://www.useplus.com/PlusLicenseGenerator/Steps/Start.aspx [Accessed: 5 July 2018].
- PrivCo (n.d.) Copyright Clearance Center | PrivCo | Private Company Financial Intelligence. [Online]. Available from: http://www.privco.com/private-company/copyright-clearance-center [Accessed: 10 June 2018].
- Richter, Felix (2014) Infographic: Does the Rich World Take the Internet for Granted? [Online]. Statista Infographics. Available from: https://www.statista.com/chart/3032/perceived-importance-of-the-internet/ [Accessed: 21 July 2018].
- Rights Direct (n.d.) Über das Copyright Clearance Center. [Online]. RightsDirect. Available from: https://www.rightsdirect.com/de/ueber-das-copyright-clearance-center/ [Accessed: 10 June 2018].
- Rubin, Z. (2012) Let's Spread the Word About Fair Use. The Chronicle of Higher Education. [Online]. Available from: https://www.chronicle.com/article/Lets-Spread-the-Word-About/134544 [Accessed: 10 June 2018].
- Siepermann, Markus (n.d.) Definition: Web 2.0. [Online]. Gabler Wirtschaftslexikon Online. Available from: http://wirtschaftslexikon.gabler.de/definition/web-20-51842 [Accessed: 8 July 2018].
- Statista (2018) Mobile OS market share 2018. [Online]. Statista. Available from: https://www.statista.com/statistics/266136/global-market-share-held-by-smartphone-operating-systems/ [Accessed: 22 July 2018].
- The Economist (2014) The startup explosion. The Economist. [Online]. Available from: https://www.economist.com/the-economist-explains/2014/03/30/the-startup-explosion [Accessed: 1 September 2018].
- Thomas Hoppe, Bernhard Humm, & Anatol Reibold (eds.) (2018) Semantic Applications. [Online]. Berlin, Heidelberg, Springer Berlin Heidelberg. Available from: doi:10.1007/978-3-662-55433-3 [Accessed: 27 June 2018].
- TLDRLegal (n.d.) Blog & Updates - TLDRLegal. [Online]. Available from: https://tldrlegal.com/blog [Accessed: 17 May 2018].
- USU (n.d.) USU Software AG. [Online]. Available from: https://www.usu.de/de/ [Accessed: 27 June 2018].
- Vaughan-Nichols, Steven J. (2018) FOSSA: Open-sourcing open-source license management. [Online]. ZDNet. Available from: https://www.zdnet.com/article/fossa-open-sourcing-open-source-license-management/ [Accessed: 21 June 2018].
- Williams, Alex (2018) Automating Licensing Compliance When 90 Percent of Components are Open Source. The New Stack. [Online]. Available from: https://thenewstack.io/automating-licensing-compliance-90-percent-components-open-source/ [Accessed: 21 June 2018].
- WKO a (2018) Societas Europaea (SE). [Online]. Available from: https://www.wko.at/service/wirtschaftsrecht-gewerberecht/Societas_Europaea_(SE).html [Accessed: 29 July 2018].
- WKO b (2018) Ein Unternehmen in den USA gründen. [Online]. Available from: https://www.wko.at/service/aussenwirtschaft/ein-unternehmen-in-den-usa-gruenden.html [Accessed: 29 August 2018].
- World Bank (2014). Open Data for Economic Growth. [Online] Available from:http://www.worldbank.org/content/dam/Worldbank/document/Open-Data-for-Economic-Growth.pdf. [Accessed: 8 July 2018]

8.5 Other Sources:

- DALICC (2017) DALICC Presentation Semantics 2017-09-12, Internal PowerPoint Presentation for Semantics 2017 in Amsterdam
- DALICC Proposal (2015) DALICC Proposal for a Cooperative R&D Project in Industrial Research and Experimental Development for the Austrian Research Promotion Agency (FFG)

Addendum:

Exposé Master These   1. Abgabe

Familienname	**Seeberg-Elverfeldt**
Vorname	Clemens
Matrikelnummer	mm161840
Mailadresse	mm161840@fhstp.ac.at , clemens.seeberg.e@gmail.com
Telefonnummer	0043 676 50 74 001
Datum	11. Januar 2018

Name Betreuer	FH-Prof. Mag. Dr. Tassilo Pellegrini	**Bestätigung der Betreuung durch Unterschrift des Betreuers**
Thema	Themenfelder im Curriculum: **Strategisches Management/ Medienökonomie/ Digitales Medienmanagament/ Grundlagen Informatik** Diese Arbeit untersucht, inwiefern sich das bereits in Entwicklung befindliche automatisierte Lizensierungsservice DALICC in Form eines wirtschaftlich effizienten Geschäftsmodells umsetzen lassen kann. Hierzu wird eine generelle Konkurrenzanalyse durchgeführt und auf Basis theoretischer Grundlagen im Bereich „Service Science" und „Economics of Platforms", welche sich zum Teil bereits in der Praxis bewährt haben, entlang des Business Model Canvas ein Geschäftsmodell entwickelt. Abschließend ergibt sich aus der Wahl des Geschäftsmodells auch die Empfehlung einer passenden Rechtsform.	
Arbeitstitel	Geschäftsmodellentwicklung für das automatische, digitale Lizensierungsservice DALICC entlang des Business Model Canvas	

Problemstellung/Forschungs-frage	FF1: Inwiefern lässt sich für ein bereits in der Betaversion befindliches automatisches Lizensierungsservice eine Geschäftsstrategie entlang des Business Model Canvas entwickeln? FF2: Entwicklung einer Value Proposition und eines effektiven und effizienten Erlösmodells FF2 b: Economies of Platforms: Positionierung und Verknüpfung mit bestehenden Services und Plattformen.

Aufbau und Gliederung	**1. Einleitung**
	    1.1. Problemstellung und Zielsetzung
	    1.2. Aufbau und Methodik
	2. Das Konzept „Business Model"
	    2.1. Theoretische Ansätze
	    2.2 Möglichkeiten der praktischen Umsetzung
	3. Theoretische Grundlagen zur „Service Science"
	    3.1. Grundlagen & Definition
	    3.2 Bedeutung und Aufbau des „…As A Service"-Konzepts
	    3.3 Medienwissenschaftliche Theorien zur Service Science
	4. Theoretische Grundlagen zu den „Economics of Platforms"
	    4.1. Grundlagen & Definition
	    4.2 Bedeutungen und Aufbau von Plattformen
	    4.3 Medienwissenschaftliche Theorien zu Plattformen
	5. Forschungsfragen
	6. Methodischer Teil
	7. Empirischer Teil
	    7.1. Konkurrenzanalyse
	    7.1.1. Fallstudienanalyse entlang des Business Model Canvas
	    7.2. Rechtsform und Begründung
	    7.2. Beantwortung der Forschungsfragen
	8. Conclusio und Ausblick
	Literaturverzeichnis
	Anhang

Methodenwahl	**Fallstudie**: Entwicklung eines Geschäftsmodells unter Zuhilfenahme des Business Model Canvas:
	
	    1. Konkurrenzanalyse
	    2. Entwicklung Business Model
	    3. Rechtsform und Begründung

Literaturhinweise	• Archer, P., Dekkers, M., Goedertier, S., Loutas, N. (2013). Study on business models for Linked Open Government Data. ISA programme by PwC EU Services. European Commission. See also: https://www.w3.org/2013/share-psi/workshop/krems/papers/LinkedOpenGovernmentDataBusinessModel, accessed November 29, 2017. • Deloitte (2012). Open growth. Stimulating demand for open data in the UK. See also http://www2.deloitte.com/content/dam/Deloitte/uk/Documents/deloitte-analytics/open-growth.pdf, accessed November 29, 2017. • ENISA (2013). Detect, SHARE, Protect Solutions for Improving Threat Data Exchange among CERTs, October 2013. • Ermilov, I., & Pellegrini, T. (2015). Data licensing on the cloud: empirical insights and implications for linked data (S. 153–156). ACM Press. • European Commission (2014). Towards a thriving data-driven economy. Brussels, 2.7.2014, COM(2014) 442 final. • Frangos, J. (2015). New Transparency in Licensing: Overview of the Licensing Facilitation Act. In: Informed Counsel, 6/1, p. 2. • Frosterus, M., Hyvönen, E., & Laitio, J. (2011). Creating and Publishing Semantic Metadata about Linked and Open Datasets. In D. Wood (Ed.), Linking Government Data (S. 95–112). New York, NY: Springer New York.

- García, R., & Gil, R. (2009). Copyright Licenses Reasoning an OWL-DL Ontology. In Proceedings of the 2009 Conference on Law, Ontologies and the Semantic Web: Channelling the Legal Information Flood (p. 145–162). Amsterdam: IOS Press.
- García, R., Gil, R., & Delgado, J. (2007). A web ontologies framework for digital rights management. Artificial Intelligence and Law, 15(2), 137–154. http://doi.org/10.1007/s10506-007-9032-6.
- García, R., Gil, R., & Delgado, J. (2004). Intellectual Property Rights Management Using a Semantic Web Information System. In R. Meersman & Z. Tari (Eds.), On the Move to Meaningful Internet Systems 2004: CoopIS, DOA, and ODBASE (Bd. 3290, S. 689–704). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Gebser M, Kaufmann B, Kaminski R, Ostrowski M, Schaub T, Schneider M (2011) Potassco: The potsdam answer set solving collection. Ai Communications 24 (2): 107–124
- Governatori, G., Lam, H.-P., Rotolo, A., Villata, S., Auguste Atemezing, G., & Gandon, F. (2014). LIVE: a Tool for Checking Licenses Compatibility between Vocabularies and Data (Bd. 1272). See also https://hal.inria.fr/hal-01076619, accessed November 29, 2017.
- Granickas, K. (2013). Understanding the Impact of releasing and re-using Open Government Data. In: European Public Sector Information Platform, Topic Report No. 2013/08. See also http://www.epsiplatform.eu/sites/default/files/2013-08-Open_Data_Impact.pdf, accessed November 29, 2017.
- Guibault, L. M. (2011). Open content licensing: from theory to practice. Amsterdam: Amsterdam Univ. Press.
- Hoffmann, A., Schulz, T., Zirfas, J., Hoffmann, H., Roßnagel, A., & Leimeister, J. M. (2015). Legal Compatibility as a Characteristic of Sociotechnical Systems. Business & Information Systems Engineering, 57(2), 103–113. http://doi.org/10.1007/s12599-015-0373-5.
- Houghton, J. (2011). The Costs and Benefits of Data Provision. Report to the Australian National Data Service. Centre for Strategic Economic Studies, Victoria University
- Hyland, B., & Wood, D. (2011). The Joy of Data - A Cookbook for Publishing Linked Government Data on the Web. In D. Wood (Ed.), Linking Government Data (S. 3–26). New York, NY: Springer New York.
- IDC & Open Evidence (2013). European Data Market. SMART 2013/0063. See also https://drive.google.com/a/open-evidence.com/file/d/0B5Co3wBffnzhUTBQUklCS0VoRTg/view?pref=2&pli=1, accessed November 29, 2017.
- Jain P. , Hitzler P. , Janowicz K. , and Venkatramani C. (2013). There's no money in linked data. In: http://knoesis.wright.edu/pascal/pub/nomoneylod.pdf, accessed November 29, 2017.
- Kirranne, S., Mileo, A., Decker, S. (2015). Access Control and the Resource Description Framework: A Survey. In: Semantic Web Journal. See also: http://www.semantic-web-journal.net/content/access-control-and-resource-description-framework-survey, accessed November 29, 2017.
- OECD (2008). Intellectual Assets and Value Creation. See also: http://www.oecd.org/sti/inno/40637101.pdf, accessed November 29, 2017.
- Roehring, P., Pring, B. (2013). The Value of Signal and the Cost of Noise. London: Oxford Economics.
- Pellegrini, T. (2014). Linked Data Licensing – Datenlizenzierung unter netzökonomischen Bedingungen. In E. Schweighöfer et al. (Eds.), Transparenz. 17. Int. Rechtsinformatik Symposium IRIS 2014. Wien: OCG Verlag.
- Polleres, A., Wallner, J.P. (2013). On the relation between sparql1. 1 and answer set programming. In Journal of Applied Non-Classical Logics. 23 (1-2): 159–212
- Pucella, R., & Weissman, V. (2002). A Logic for Reasoning about Digital Rights. In Proceedings of the 15th IEEE Workshop on

Computer Security Foundations (p. 282–294). Washington, DC, USA: IEEE Computer Society.

- Prenafeta, J. (2010). Protecting Copyright Through Semantic Technology. Publishing Research Quarterly, 26(4), 249–254.
- Rodriguez-Doncel, V., & Delgado, J. (2009). A Media Value Chain Ontology for MPEG-21. IEEE Multimedia, 16(4), 44–51. http://doi.org/10.1109/MMUL.2009.78
- Rodriguez, E., Delgado, J., Boch, L., & Rodriguez-Doncel, V. (2015). Media Contract Formalization Using a Standardized Contract Expression Language. IEEE MultiMedia, 22(2), 64–74. http://doi.org/10.1109/MMUL.2014.22.
- Sande, M.S., Portier, M., Mannens, E., Van de Walle, R. (2012). Challenges for open data Usage: Open Derivatives and Licensing. In: https://www.w3.org/2012/06/pmod/pmod2012_submission_4.pdf, accessed February 12, 2016.
- Sonntag, M. (2006). Rechtsschutz für Ontologien. In e-Staat und e-Wirtschaft aus rechtlicher Sicht. Stuttgart: Richard Boorberg Verlag.
- Steyskal S., Polleres A. (2015). Towards formal semantics for ODRL policies. In: Rule Technologies: Foundations, Tools, and Applications - 9th International Symposium, RuleML 2015, Berlin, Germany, August 2-5, 2015, Proceedings, pp 360–375, URL https://doi.org/10.1007/978-3-319-21542-6 23
- Villata, S., Gandon, F. (2012). Licenses compatibility and composition in the web of data. In: COLD - Workshop in conjunction with the 11th International Semantic Web Conference 2012. CEUR WS Proceedings, 905.
- World Bank (2014). Open Data for Economic Growth. See also http://www.worldbank.org/content/dam/Worldbank/document/Open-Data-for-Economic-Growth.pdf, accessed November 29, 2017.
- Hefley, Bill (2008): Service science, management and engineering education for the 21st century. New York, NY: Springer. — ISBN: 978-0-387-76577-8
- Akaka, M.A., Vargo, S.L., 2014. Technology as an operant resource in service (eco)systems. Information Systems and e-Business Management 12, 367–384. doi:10.1007/s10257-013-0220-5
- de Grandbois, Y., 2013. The business of Service Science. Business Information Review 30, 204–209. doi:10.1177/0266382113518837
- Ermilov, I., Pellegrini, T., 2015. Data licensing on the cloud: empirical insights and implications for linked data. ACM Press, pp. 153–156. doi:10.1145/2814864.2814878
- Kiefer, M.L., 2015. Dienstleistungsökonomik und Medien, in: Krone, J., Pellegrini, T. (Eds.), Handbuch Medienökonomie. Springer Fachmedien Wiesbaden, Wiesbaden, pp. 1–25. doi:10.1007/978-3-658-09632-8_6-1
- Kiefer, M.L., 2017. Journalismus als Dienstleistung? Eine dienstleistungstheoretische Einschätzung. Medien & Kommunikationswissenschaft 65, 682–703. doi:10.5771/1615-634X-2017-4-682
- Klimsa, P., 2017. Digitale Medienprodukte: Grundlagen der Medienproduktforschung, Forschung und Praxis der Medienproduktion. BoD-Books on Demand, Norderstedt.
- Maglio, P.P., Vargo, S.L., Caswell, N., Spohrer, J., 2009. The service system is the basic abstraction of service science. Information Systems and e-Business Management 7, 395–406. doi:10.1007/s10257-008-0105-1
- Ostrom, A.L., Parasuraman, A., Bowen, D.E., Patrício, L., Voss, C.A., 2015. Service Research Priorities in a Rapidly Changing Context. Journal of Service Research 18, 127–159. doi:10.1177/1094670515576315
- Pellegrini, T. (2012). Semantic Metadata in the News Production Process. Achievements and Challenges. In: Lugmayr, Artur; Franssila, Heljä; Paavilainen, Janne; Kärkkäinen, Hannu(Eds). Proceeding of the 16th International Academic MindTrekConference 2012, Tampere / Finland. ACM SIGMM, p. 125-133
- Pellegrini, T., Dirschl, C., Eck, K., 2014. Linked data business cube: a systematic approach to semantic web business models. ACM Press, pp. 132–141. doi:10.1145/2676467.2676489

	• Vargo, S.L., Lusch, R.F., 2004. Evolving to a New Dominant Logic for Marketing. Journal of Marketing 68, 1–17. doi:10.1509/jmkg.68.1.1.24036 • Weigand, K. H.: Aspekte einer Medienökonomie. In (Langenbucher, W. R. Hrsg.): Publizistik-und Kommunikationswissenschaft. Ein Textbuch zur Einführung in ihre Teildisziplinen. Braumüller, Wien, 1988; S. 164–178.
Bei Firmenarbeiten:	Interne Materialien, Besprechungen mit externen Rechtsberatern, Besprechungen mit Entwicklungsteam, fortlaufende Meetings
Firmenzustimmung liegt vor	■ ja ☐ nein
Allfälliges	• Medien sind Dienstleistungen ohne oder mit geringem Sachgutcharakter (Weigand, 1988) • Medienökonomie sollte einen stärkeren Fokus auf Service Research legen (Kiefer, 2015) • „Service-dominant Logic" anwendbar auf das Prinzip von Public Value (Vargo& Lusch, 2004) (Kiefer, 2017) • Service Science bietet einen interdisziplinären Rahmen um digitale Ökosysteme zu analysieren und konzeptualisieren