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Designing Compliance Patterns: Integrating Value Modeling, Legal Interpretation and Argument Schemes for Legal Risk Management

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IN LAW, SCIENCE AND TECHNOLOGY

by

Robert Kevin Muthuri KIRIINYA
Born on 9 May 1985 in Nairobi Kenya

DESIGNING COMPLIANCE PATTERNS: INTEGRATING VALUE MODELING, LEGAL INTERPRETATION AND ARGUMENT SCHEMES FOR LEGAL RISK MANAGEMENT

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To my late grandma Marion, you will always remain my watchtower!

To my mother, my everything and my pillar of strength!

To all those who can't access justice owing to the complexity of our legal systems!

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Abstract

Companies must be able to demonstrate that their way of doing business is compliant with relevant rules and regulations. However, the law often has open texture; it is generic and needs to be interpreted before it can be applied in a specific case. Entrepreneurs generally lack the expertise to engage in the regulatory conversations that make up this interpretation process. In particular, for the application domain of technological startups, this leads to legal risks. This research seeks to develop a robust module for legal interpretation. We apply informal logic to bridge the gap between the principles of interpretation in legal theory with the legal rules that determine the compliance of business processes. Accordingly, interpretive arguments characterized by argument schemes are applied to business models represented by value modeling (VDML). The specific outcome of the argumentation process (if any) is then summarized into a compliance pattern, in a *context-problem-solution* format. Two case studies in the application area of startups shows that the approach is able to express the legal arguments, but is also understandable for the target audience. The project is presented in two parts; Part I, the background, contains an introduction, literature review, motivational case studies, a survey on legal risks, and a modeling of business and legal aspects. Part II builds on the interdisciplinary facets of the first part to develop the Compliance Patterns Framework which is then validated with two case studies followed by a conclusion.

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Acronyms

AML Anti-Money Laundering 18, 133, 135, 136, 145, 146

CATV Community Antenna Television 114, 116, 117, 121, 123, 124

CBK The Central Bank of Kenya 135–138, 140, 142, 148

CDPA Copyright, Design and Patents Act 1988 ..... 47, 50

CJEU Court of Justice of the European Union 17, 46, 47, 51–53, 82, 180

CPF Compliance Patterns Framework 13, 14, 17, 92, 175, 179, 181

EARS Easy Approach to Requirements Engineering 37, 105, 125, 173, 181

GRC Governance, Risk and Compliance 7

ISP Internet Service Provider 113, 122

KYC Know Your Customer 18, 133, 135, 136, 145

LKMS Legal Knowledge Management System 10, 28, 39

OFCOM Office of Communications 22

OMG Object Management Group 10

PSI Public Sector Information 161, 163, 176

RE Requirements Engineering 5, 23, 36, 37, 180, 182, 183

RPSI Re-use of Public Sector Information 161, 163, 172, 174

SCOTUS Supreme Court of the United States 17, 114, 116, 117, 120–123, 180

SME Small to Medium-Sized Enterprise 7

SWIFT Society for Worldwide Interbank Telecommunication 131

TVC TV Catchup Ltd 46, 47, 53, 82, 83, 180, 181

VDMBee Value Delivery Metamodel - Business enterprise engineering ... 10, 26, 39, 77, 82, 180–182

VDML Value Delivery Modeling Language 10, 24, 26

Part I

The Background

Chapter 1

Introduction

1.1 Synopsis

Significant gains are being made within legal informatics and tools for legal knowledge management. As Susskind [2008] predicted, demonstrable results, for instance on time and cost savings from applying neural networks to legal discovery, have moved the legal domain quickly from reticence and ambivalence, to gradual adoption of these new techniques. These so-called deep learning techniques leverage a robust pattern-matching apparatus. However, they introduce a black box architecture which is not transparent for regulatory purposes. More work is needed to show how the governing rules were interpreted and applied for a given technology to be compliant.

This thesis focuses on the application area of regulatory compliance. Companies need to be able to demonstrate that their business processes conform with relevant rules and regulations. A module for legal interpretation is a necessary component for any formal model or algorithm applied to regulatory compliance, see also Boella et al. [2013b]. This will help both regulators and companies understand what is happening and what can be done to correct unwanted behaviors. Tools to support legal interpre-

tation will also have the potential to give those entrepreneurs who are unable to afford expensive legal consultants the possibility to (a) take their responsibilities in being compliant, and (b) exploit hitherto unforeseen business opportunities in the law.

We address these questions by proposing a comprehensive approach to compliance, which should help firms manage their legal risks. The method is expected to help business owners investigate a business model's legal risks, select and interpret the relevant laws to understand how to handle those risks, and formulate common patterns that can be used to check the business model for compliance. The idea is to summarize knowledge and expertise about compliance of business processes in the form of so called *compliance patterns*, compare Kartseva et al. [2010], Elgammal et al. [2016]. Similar to design patterns Gamma et al. [1994], compliance patterns consist of a *context-problem-solution* structure.

1.2 Context

Compliance involves assessing the organization's business processes to see whether they conform to the law. However, the law may sometimes be open textured: designed to fit a number of scenarios [Dworkin, 1977]. That is why lawyers, judges and other legal officers engage in an interpretive process while applying legal rules which may in turn require legal argumentation to determine the prevailing interpretation in a particular instance. Black [2002] calls these regulatory conversations. This may prove problematic especially for firms which leverage technology to innovate on areas which are yet to be legislated on, or for whose jurisprudence and case-law may not be as developed.

1.2.1 The ITxLaw misalignment

The ITxLaw misalignment is commonly highlighted by innovation and technology lawyers, that the law is unable to keep pace with technological innovation. Lawyers may

lack the technical expertise to assess the impact and flexibility of general legal principles to fit new business process innovations and solutions. Conversely, while technical experts may be able to appreciate overarching legal principles e.g. privacy or copyright, they may not be able to condense them to fit new scenarios.

Most regulatory frameworks are concerned with defining the *general legal doctrine* of a particular domain. Where such doctrine is mature, its rules procedures and tests may be prevalent and therefore directly applicable to the business processes of the firms in that domain. However, with the continued growth and complexity of the law, this will increasingly be the exception. Besides, new agile methods from IT have popularized disruptive innovation and "uberisation". This results in fast-evolving business models wherein most domains will require new doctrine to be developed. However, such doctrine is not always directly applicable as it may not be particularized enough to apply directly to a firm's business processes. It needs to mature through interpretation by lawyers, regulators, legal scholars and other jurists.

1.3 The problem

A number of developing frameworks in the AI and Law space aim to tackle this misalignment from different perspectives: a) for legal reasoning e.g. Rotolo et al. [2015] b) the management of legal knowledge e.g. Eunomos Boella et al. [2016] or c) for the acquisition and specification of legal requirements in Requirements Engineering (RE) e.g. Nomos 3 Ingolfo et al. [2014], Legal-URN Ghanavati et al. [2013] and FBRAM Breaux [2009]. These developments are crucial towards solving the misalignment. The role of legal interpretation has however been overlooked. We still need systematic methods to explore the solution space in terms of the possible interpretations that could result from applying a given legal provision.

1.3.1 Legal interpretation

Compliance is defined by certain behavior in public and private law to govern interactions among citizens. For firms, this behavior is characterized in their business processes [Rozinat and van der Aalst, 2008]. However, the intricacies of matching precise business processes within the elaborate linguistic patterns and semantics of the legislative and juridical language found in legal rules are significant. Legislative drafting is a complex art designed to factor competing considerations including concerns that may only arise in the future. As a result, some legal provisions are purposefully broad [Boella et al., 2013b]. This may lead to ambiguities in certain instances that will need to be interpreted to fit the circumstances of the case [Boella et al., 2014a]. We therefore need robust methods of interpreting legal requirements before we can apply them. Unfortunately, the mechanics of legal interpretation do not come defined with the law, they remain with the legislative drafters, legal theorists, judges, lawyers and other legal minds. As such, we need elaborate methods detailing legal interpretation methods that can then be incorporated in the developing frameworks identified in section 1.3.

1.3.2 Scope

While our approach to compliance may be applicable to all firms, in this research project we restrict ourselves to the application domain of startups. A startup is a company, partnership, or temporary organization designed to search for a repeatable, scalable business model that allows for fast growth [Blank and Dorf, 2012]. Startups became popular with the dot com bubble at the turn of the century. They are revolutionizing many aspects of life as we know it by disrupting mainstream business models that have dominated traditional markets for long.

The disruption refers to new, innovative technologies that periodically emerge and fundamentally transform companies, industries and markets [Christensen, 2013]. They

do so by leveraging such technologies and the internet to create new markets and offer products and services across transnational borders at lower costs. However, to do so, they face formidable challenges to innovate scalability, raise funding, acculturate to multilingualism and ward off regulatory challenges across transnational and multilevel jurisdictions. Therefore, unlike most businesses, startups are confronted with the higher likelihood of failure right from the start of their venture [Menkveld, 2012, Luo and Mann, 2011, Marcovici, 2013].

In addition, startups and Small to Medium-Sized Enterprises (SMEs) may not afford to maintain compliance, legal or internal audit departments, a typical feature in mainstream corporations. Governance, Risk and Compliance (GRC) management is even more complicated for startups as they have short turnaround times of around three to six months to deliver a prototype or launch a product. Moreover, our survey in chapter 4 shows that they may not be sensitive to the legal risks that their innovative business models present. Even when the founders are aware, such risks rank low compared to other demands to monetize their business model. In some instances, the risk could vitiate the business model. For instance, our first preliminary case of Aereo in section 3.1, went bankrupt after failing to defend the suit filed against them.

1.4 The objectives

The general objective behind this research therefore, is to make the law more accessible in specific contexts of usage particularly for non-experts to identify and handle legal risks. Given the focus on startups, the specific objective is to investigate how to make the law more accessible for regulatory risk management and compliance for the startup domain. The goal is to help firms understand how they can achieve compliance. This is problematic given the traditional view of compliance as a binary split that you are either compliant or not. Perhaps leaning on the fact that only a judge can make

such a decision and there is no halfway house in it. Over time, this view has been challenged with the notion that compliance is the result of a regulatory conversation Black [2002] occurring between firms and regulators. Here, firms engage in a number of activities targeted to achieve compliance. However, many regulators will shy away from adjudging such activities as being compliant.

Discussions with industry players revealed that in the U.S. and the Netherlands, it is deemed favoritism if a regulator advises a single firm. As such, regulators fall back on organizing workshops for all industry players on specific developments in the law but remain unwilling to commit to a specific interpretation. This is understandable, the law aims to be futuristic and to capture a number of scenarios and thereby explaining why regulators may want to reserve as much room to flex their regulatory muscle. However, it is also restrictive and expensive approach that offends the principle of legal certainty, a key pillar pursued by many legal systems [Sartor et al., 2011, p. 3]. It inhibits firms especially those relying on their innovative capacities such as startups and other SMEs and regulators resulting in a regulatory gap in many legal systems in this regard.

The current reality is that we cannot ascertain absolute compliance for firms without the promulgation of a judge or regulator. This forces us to step down from aiming for absolute compliance to legal risk management. So the more realistic objective is to explore the normative space governing a particular technology in order to make it accessible at the information architecture level where non-experts can identify and manage legal risks. This will help firms manage the legal risks they encounter while innovating with new technologies and inspires the research questions below.

1.4.1 Research questions

1. How can legal knowledge engineers use the tools and techniques within legal informatics to support and minimize legal costs for startups?

   (a) How to effectively establish the legal risks in a startup's business model resulting from its disruptive technology?
   (b) How to develop business models whose processes achieve their value while minimizing legal risks?

2. Given the legal uncertainty that startups' disruptive business models create, how should provisions in the relevant legal frameworks be interpreted?
   (a) How to accurately determine the legal requirements for disruptive technology?
   (b) How to derive and maintain different interpretations that can be ascribed to a particular legal requirement?
   (c) How to reconcile conflicting interpretations of a given legal requirement?
3. How could legal knowledge engineers apply the final interpretations to manage a firm's business risks?
   (a) How to effectively map these interpretations onto startups' business models?
   (b) How to iteratively transition business models from high-risk to low-risk models?

1.5 Methodology

For a comprehensive approach, we will need to model the business and its activities. The legal rules will then be determined and any legal issues arising interpreted in order to determine the scope of compliant behavior. Next the interpretations are reconciled and the resulting prescriptions are formulated into patterns that describe how a business model can achieve compliance. Accordingly, our approach incorporates the following elements:

1.5.1 Value modeling

The value-based approach as a form of business modeling is a quick and effective way to model the firm's core business processes. It also helps frame the research to address business needs which helps assure of its relevance. Our choice of modeling language, Value Delivery Modeling Language (VDML), is now an Object Management Group (OMG) standard. Tools for modelling using value modelling include e^{3}value modelling language Gordijn [2002] and Value Delivery Metamodel - Business enterprise engineering (VDMBee). These facilitate the exploration of an innovative e-commerce idea by incorporating principles from requirements engineering and conceptual modeling to focus on IT-intensive value propositions. It therefore helps handle the explosion of the e-commerce design space where many mutually influencing design issues have to be decided upon, ranging from strategy and marketing to technological issues. This scenario is radically different from traditional IT-intensive projects where the business environment is more certain.

1.5.2 Eunomos

Our starting point is Eunomos, a Legal Knowledge Management System (LKMS) for compliance management using legal ontologies Boella et al. [2016]. Eunomos is a state-of-the-art system with a legal repository and an ontological tool that classifies legal sources into navigable domains of law. It entrenches a juristic conceptualization of the law that allows a legal knowledge engineer to enrich legal provisions with multiple interpretations. This facilitates an interpretive process while eliciting the legal requirements for compliance purposes. This conceptualization also accommodates the fact that there could be more than one technical solution applied to satisfy a particular legal requirement. However, the addition of interpretations is an ad hoc process based on emerging jurisprudence from the courts and regulators. Our aim is to augment Eunomos with

a methodical way to determine and reconcile the possible interpretations of the legal provisions repository in order to determine the legal requirements applicable to a given business model.

1.5.3 Canons of interpretation

Legal doctrine embodies a number of principles from legal theory that are used in legal interpretation. Such principles, referred to as canons of interpretation (hereafter "canons"), may at times be competing, thereby resulting in conflicting interpretations. In other instances, the interpretations could complement each other. Even then, one might have a reason to prefer one interpretation over another owing to the weight placed on one interpretive principle over the other [Rotolo et al., 2015]. It is these canons that we appropriate to interpret legal rules.

Interpretations can take many thematic forms including a linguistic, systemic, teleological - evaluative, or trans-categorical perspective [MacCormick and Summers, 1991]. Each of these themes has a number of arguments: the linguistic could either have an ordinary or a technical meaning; systemic interpretation could argue for contextual harmonization, precedent, analogy, logical-conceptual, relevant principles or history; the teleological could argue for purpose or substantive reasons; and the trans-categorical looks for the intention from among the foregoing. These arguments and their respective categories rest upon and implement values of special significance in legal order.

1.5.3.1 Legal argumentation

There may be a need to reconcile different interpretations of a legal rule regardless of whether they complement or conflict with each other. For this, we apply the general model for interaction of interpretative arguments proposed in MacCormick and Summers [1991]. This model exploits the foregoing general distinction of argument

types into four broad categories of linguistic, systemic, teleological-evaluative and trans-categorical arguments.

1.5.4 Compliance patterns

We use the final interpretations to develop prescriptions which can be applied to the value model. The prescriptions are used for formulate patterns of compliance with the aid of argument schemes from informal logic. We call the result a *compliance pattern* which can be used to assess the value model for compliance.

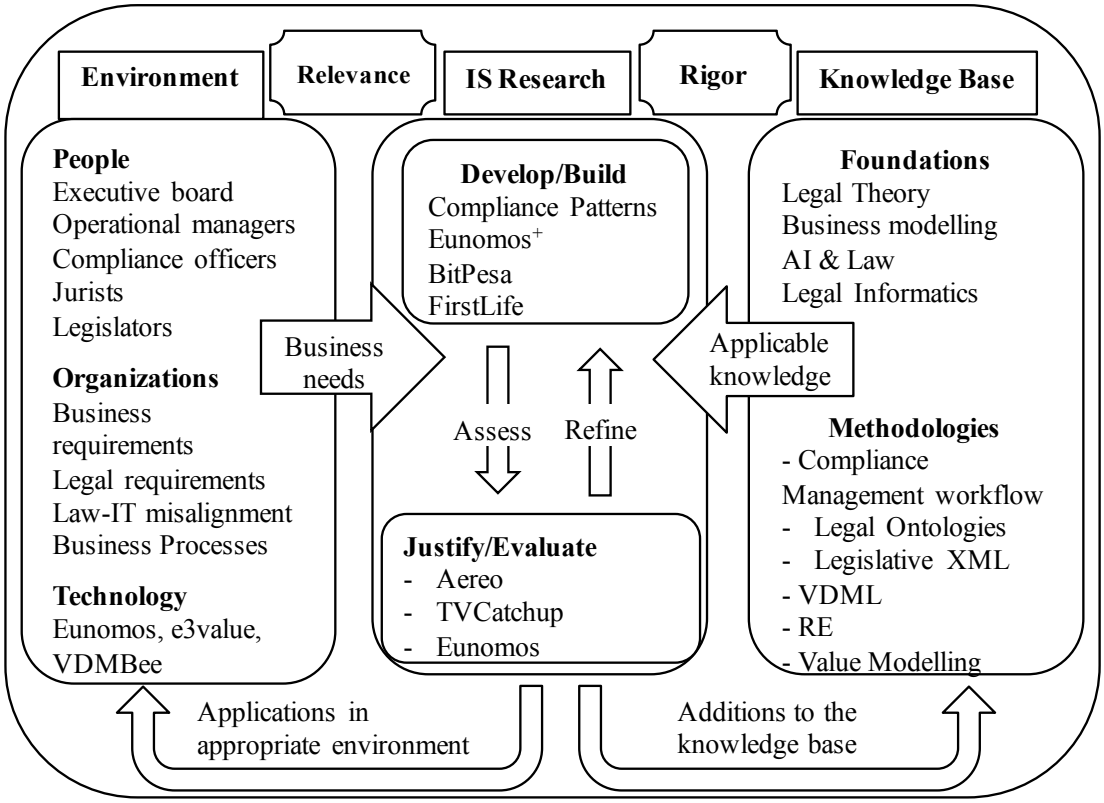

Figure 1.1: Thesis Research Framework

1.5.5 Design principles

Our research takes a design-science approach. This type of research should result in a viable artifact in the form a construct, a model, a method or an instantiation [Hevner et al., 2004]. Prior legal informatics research and results from reference disciplines provides foundational theories, frameworks, instruments, constructs, models, methods, and instantiations used in the develop/build phase of a research study. Rigor will be pursued by appropriately applying existing foundations and methodologies. We will draw on the resources and tools described in Figure 1.1 to model the core business of the startup in order to assess how it will be impacted by the law. We also aim for relevance by testing the environment needs in a survey and studying several cases in detail.

1.6 Thesis contributions

We strive for an interdisciplinary effort to combine research efforts from different domains. This will deliver a comprehensive method that delivers scientific relevance to the new area of Legal Informatics within AI and Law, while having direct application and benefit for the entrepreneurial efforts of startups in the business domain. The main contribution is a method for deriving compliance patterns which will help to narrow the misalignment between IT and Law.

The compliance patterns themselves will facilitate the compliance of business models in specialised domains which will not only minimise the costs of non-compliance but also protect governments from the possible loss of taxes. The patterns will also help in the tracking of the interpretative decisions the firm makes thereby facilitating a regulatory conversation with regulators. Moreover, the Compliance Patterns Framework (CPF) adds another method Hevner et al. [2004] to the foundations in the legal informatics

knowledge base.

The *context-problem-solution structure* aims to guide entrepreneurs, compliance officers, and other business executives to solve business problems within the legal solution space. The patterns will be most useful to the innovation process such that entrepreneurs will be able to consult on how the implementation of their envisioned systems could be hampered by existing legal frameworks and how to cater for legal risks while designing their business models. Technical experts could similarly benefit from these patterns to determine the protocols to be implemented in a system. The CPF covers the following sub-contributions:

1. A meta-model formalizing concepts of the framework;
2. Implementation of the meta-model to derive compliance patterns;
3. Definition of a methodology for legal risk analysis using value models;
4. Mapping multiple interpretations to business processes; and
5. Extension of the Eunomos ontology with a module for interpretation.

In addition, exploratory case studies illustrated below will help evaluate the utility, quality and efficacy of the foregoing design artifacts. The first study of two media technology startup scenarios in the problem environment already demonstrate gaps in legal knowledge management that our proposed artifacts could make a significant contribution.

The application of the methodology to Eunomos will ensure that legal experts using the system arrive at consistent interpretations particularly for new innovations. Even more importantly, they will be able to track the evolution of particular laws and the consequent effect on interpretation. This could cut down on the time spent on legal research hence lowering the legal costs and thereby the costs of compliance for many firms.

This research also involves a survey that investigates how startups make decisions

regarding legal risks. It helps us to analyze the gaps in legal risk management in order to develop appropriate requirements for the CPF in chapter 6.

1.6.1 Publications based on thesis

We are continually growing a number of publications presented below in reverse chronological order. The following are the papers where the candidate was the main author:

1. Muthuri R, Boella G, Hulstijn J, Capecchi S, and Humphreys L, (2017), Compliance patterns: harnessing value modeling and legal interpretation to manage regulatory conversations. *In Proceedings of ICAIL '17, London, United Kingdom*, June 12-16, 2017
2. Muthuri R, Boella G, Hulstijn J, and Humphreys, L (2016), Argumentation-based legal requirements engineering: The role of legal interpretation in requirements acquisition *9th Int. Workshop on Requirements Engineering and Law (RELAW).*
3. Muthuri R., (2016) Value-based Models for Ontology-driven, Legal Risk Management, *10th International Workshop on Value Modeling and Business Ontologies.*
4. Muthuri R., (2015) The Place of Legal Ontologies in Regulatory Compliance, *ICAIL Doctoral Consortium.*
5. Muthuri R, Boella G, Hulstijn J, (2014) Augmenting Legal Knowledge Management Systems with model-based Compliance Patterns, *Italian Chapter of AIS.*
6. Muthuri, R, Ghanavati S, Rifaut A, Humphreys L, and Boella G, (2014), The Role of Power in Legal Compliance, 7th Int. *Workshop on Requirements Engineering and Law (RELAW)*, Karlskrona, Sweden, Extended Abstract.
7. Boella G, Humphreys L, Muthuri R, Rossi P, van der Torre L, Managing Legal Resources in Open Governance and E-Democracy: Eunomos - An AI and Law Response, *Proceedings of the International Conference for E-Democracy and Open*

Government 2014, Reflection.

The following are papers where the candidate has had a significant contribution in works related to the thesis.

1. Robaldo L., Humphreys L., Sun X., Cupi L., Santos CT., Muthuri R., (2015) The ProLeMAS project: representing natural language norms in Input/Output logic. *Ninth International Workshop on Juris-informatics (JURISIN).*
2. Bartolini C., Muthuri R., Santos C., 2015, Using Ontologies to Model Data Protection Requirements in Workflows, *Ninth International Workshop on Juris-informatics (JURISIN).*
3. Bartolini C., and Muthuri, R., (2015) An Ontology of the Forthcoming EU Regulation, *Workshop on Language and Semantic Technology for Legal Domain (LST4LD).*
4. Humphreys l., Boella G., Robaldo L., di Caro L., Cupi L., Ghanavati S., Muthuri R., van der Torre L., (2015) Classifying and Extracting Elements of Norms for Ontology Population using Semantic Role Labelling, *ICAIL Workshop on Automated Detection, Extraction and Analysis of Semantic Information in Legal Texts.*
5. Boella, G., Humphreys, L., Muthuri, R., Rossi, P., van der Torre, L., A Critical Analysis of Legal Requirements Engineering from the Perspective of Legal Practice, *Seventh International Workshop on Requirements Engineering and Law 2014.*
6. Boella, G., Colombo Tosatto, S., Ghanavati, S., Hulstijn, J.,Humphreys, L., Muthuri, R., Rifaut, A., and van der Torre, L. (2014), Integrating Legal-URN and Eunomos: Towards a Comprehensive Compliance Management Solution, *Proceedings of Artificial Intelligence and the Complexity of Legal Systems (AICOL).*

1.7 Thesis outline

Chapter 2: Literature review considers the state-of-the-art in compliance management; the traditional approach (legal informatics) and the philosophical approach (logic). We then explore the different components necessary for an effective interdisciplinary approach; business modeling (value modeling), legal knowledge management systems (Eunomos), legal theory (interpretation and argumentation), informal logic (argumentation schemes), and requirements engineering (EARS). We then propose a comprehensive approach for legal risk management.

Chapter 3: Case studies: motivation presents two preliminary case studies to further motivate the research. The two are authoritative cases adjudicated at the Supreme Court of the United States (SCOTUS) and the Court of Justice of the European Union (CJEU) respectively. They involve startups with disruptive technology that were held to be non-compliant. They will therefore help understand how to answer the first question.

Chapter 4: Survey on legal risks presents the design, development and dissemination of a survey done to help understand how startups manage their legal risks. It gives us further requirements for the CPF in chapter 6 and thereby sets the groundwork to answer research question 1(b).

Chapter 5: Modeling interpretive arguments details the preprocessing necessary to apply the framework. Two steps are involved: (a) an example of value modeling, and (b) semi-formalization of 11 canons of interpretation using argumentation schemes.

Chapter 6: The Compliance Patterns Framework is the main contribution of the thesis. This chapter details the semi-formalization of the legal risks analysis process using argumentation schemes. This determines the legal rules applicable to the

business model at hand. Any issues for interpretation are determined, reconciled and the resulting prescriptions define the scope of compliant behavior expected. These are then formulated into system requirements and summarized into *compliance patterns* using a *context-problem-solution* format. It answers research question 2.

Chapter 7: Evaluation The CPF is evaluated with two case studies; BitPesa in Nairobi, Kenya and Firstlife in Turin, Italy. Firstlife's technology is applied to plan and coordinate civic events using open data. This raises data management concerns, and the risk of copyright infringement while using public sector information. BitPesa uses Bitcoin to conduct money remittance services and is potentially in breach of Anti-Money Laundering (AML) and Know Your Customer (KYC) regulations as there is no regulatory framework in Kenya to handle cryptocurrencies. This helps to answer research question 3. The studies are to show that the method works, and is useful and applicable for the target audience.

Chapter 8: Conclusion explores how this work can fit within the existing tools and techniques within legal informatics and concludes the work by considering the limitations of the thesis and explores opportunities for future work.

Chapter 2

Literature Review

Figure 2.1: Compliance from a legal informatics perspective

The journey of regulatory compliance could be traced through the following pictorial depiction in Figure 2.1. This chapter is an attempt to locate each of those efforts in a bid to harmonize them. The tools work to maintain an intermediate representation of prescriptions derived from legislation relevant to a particular context. They then map these prescriptions onto business processes and data with the help of ontologies. The legal sources on the left are transformed into machine readable artifacts using legislative XML [Sartor et al., 2011]. From this we derive legal requirements which are then

classified into different domains where one can elicit usable legal prescriptions as shown in the middle section [Boella et al., 2011, van Noortwijk and van Noortwijk, 2017]. An ongoing challenge on the right is how to map the prescriptions onto business processes that are used to define the system protocols implemented in a system [Boella et al., 2014a,b]. The overall goal is to convert legislative text into structured computational artifacts [Gordon and Breaux, 2011, McCarty, 2017]. Other fields include requirements engineering, logic and other formal techniques [Ashley and van Engers, 2011].

2.1 The state-of-the-art in compliance management

Legal informatics research continues to investigate the misalignment between business processes and the relevant legal rules that determine their compliance [Sadiq and Governatori, 2015, Boella et al., 2013b]. Part of the reason for the fragmentation is the lack of a clear strategy on which context and domain to initiate the problem-solving. While the entrepreneur is concerned with the flow of value, the computer scientist is concerned with information flow and the lawyer with compliance. In addition, responses to our survey on how startups handle legal risks in chapter 4 reveal that founders struggled to identify, interpret and incorporate the law into the decision-making process. On the other hand, lawyers struggled to understand the technology involved. This calls for a strong interdisciplinary approach.

2.1.1 Soft-law

The notion of soft law aims to simplify legislation by deliverying legal frameworks that are more accessible to those being governed. This ranges from general framework directives to soft law instruments such as self and co-regulation [Marsden, 2011] and ISO standards e.g. ISO 9001:2015 requirements for quality management systems [ISO, 2015]. However, There is currently no method or reconciling such instruments with

their overriding hard law statutory frameworks. Regulators, advisers and lobby groups often attempt to fill this gap by giving compliance advice and feedback on how to comply with new laws or amendments. Even then, such initiatives are usually ad hoc and those presiding are often unwilling to commit to specific interpretations of the law and thereby legal uncertainty continues to persist.

2.1.2 The traditional view of law (legal informatics)

It is not surprising that much academic research in compliance, e.g., Lu et al. [2009], and El Kharbili et al. [2011], have sought to develop a notation to represent norms and annotate business process models. However, while technically sound, the labellings are difficult to create and the notation difficult to read for legally trained people [Boella et al., 2014a]. Moreover, BPMN-type process models are too general for use in legal settings. There are rule-based approaches currently being pursued to represent and reason with legal requirements.

The Legal Knowledge Interchange Format (LKIF) is a comprehensive suite developed within the ESTRELLA project [Klarman et al., 2008]. It incorporates a legal core ontology and a legal rule language to facilitate comprehensive legal knowledge management [Gordon, 2008, Gordon et al., 2009]. Apart from representing legal rules and facilitating legal reasoning, LKIF has the advantage of being open source. LegalRuleML is an OASIS standard[1] based on RuleML. It progresses over LKIF in its expressivity and its ability to represent temporal aspects which is crucial for the legal domain [Athan et al., 2013]. However, none of these approaches incorporate a methodology for identifying the possible interpretations that may be competing or complementing one another.

There is no system that we know of currently, that handles legal interpretation.

[1] www.oasis-open.org

This is a real problem for organizations attempting to apply the law to their area, particularly where norms are purposefully open and not specific: where for instance European law has yet to be transposed into national law, or where there have been few test cases on what the norms mean in practice.

2.1.3 The philosophical view of law (logic)

Formal models offer provable guarantees that the system will comply with the specified legal requirements. The power of ontological modeling has been applied to represent legal rules. However, legal ontologies are distinctive in that they are committed by concepts in legal theory. While a pragmatic rule-based approach has proved shallow, pure logic-based methods are also detached from the epistemological challenges in legal theory [Muthuri, 2012]. It is instructive to appreciate that legal modeling transcends technological advancement and is an intricate blend of AI technology, legal theory, and knowledge engineering. It may be possible to synthesize these fields to help the law stand the pace of technological innovation.

2.1.4 An integrated approach for AI and Law

Our design of compliance integrates the analysis of value from the business and legal domains. Given that value analysis is a complex endeavor more so in interdisciplinary settings, we look to rigorous ontology-based conceptual modelling, the core of artificial intelligence. We apply value modeling to avail of the elaborate mechanisms for measuring a startup's economic value and the value-at-risk. Similarly, our analysis of legal risk is informed by the ongoing conceptualization of value modeling based on foundational ontologies [Guarino et al., 2016].

To maximise the degree of fit, we focus on the value ascription relationship between executives as agents, and compliance, as a value object. Given that *perceived value* of

compliance is low among startups, we concentrate on the *theoretical value* of compliance. However, even with elaborate value modeling tools, it is challenging to estimate the legal risk. Courts and regulators have the power to escalate fines where they sense complacency or flagrancy. For instance, Office of Communications (OFCOM) recently fined vodafone £4.65M for non compliance where previous fines were £250,000 against H3G and £1M against EE [OFCOM, 2016]. Even then, some cues exist for estimating the risk e.g. where a defendant subsequently acquires a license after infringing a copyright, damages should not exceed double the amount payable under the license before the first infringement.

Our modeling of the interpretive process is also informed by the developing notion of relationship reification which considers a relationship as an object that helps the relation to hold [Guarino et al., 2016]. This helps us specify the consecutive steps for the legal analysis, from domain specification to argumentation, and their individual qualities. An effective integration of the legal and business domains demands a closer review of business modeling, legal risk analysis, informal logic, legal theory, and requirements engineering RE, which we undertake in the following sections.

2.2 Business modeling

We need to model the business in a manner that will represent the interests of the stakeholders from business, IT and law. A business-first approach aligns to the juristic conceptualization of the law where legal analysis begins with the facts of a given case or transaction. A similar approach has been developed in the privacy and security domain [Compagna et al., 2007]. See also the EUCases project Boella et al. [2015].

We adopt the notion of *economic value* as a unifying factor for all the stakeholders. This will help model the necessary scenarios showing possible trade-offs for the success of the business model. The point is to model choices at the strategic level of decision

making, not at an operational level. We expect that the value-based approach is a quick and effective way to model the firm's core business processes. It also helps to frame the research to address business needs, and assure its practical relevance.

Several approaches exist to value modelling. Osterwalder's Business Model Canvas is a succesful approach [Osterwalder and Pigneur, 2010]. It is easy to apply, but its results are not precise enough for legal analysis. Gordijn's e^3-value focuses on exchanges of value objects in a value network [Gordijn et al., 2006]. The e^3-value ontology is suitable in principle, but currently, e^3-value lacks tools support. Now it is only a graphical notation; the ontology cannot be used for automated reasoning. Therefore, we have adopted VDML an official representation language supported by OMG [2014]. VDML has elaborate notations for analysis and design of the operation of an enterprise and it has tool support through the VDMBee value management platform.[2]

2.2.1 The startup environment

Startups provide this research with a rich application area. The online startup environment is empowering many young and vibrant innovators to become entrepreneurs with much leaner resources compared to traditional brick and mortar stores [Blank, 2013]. However, startups rely on angel investors and venture capitalists to fund their ventures through to a successful IPO, merger or buyout. Indeed, resources in this domain are constrained and there are barely any compliance officers or an internal audit department as such. Nevertheless, they are confronted by hyper-regulation just like any other mainstream business entity.

We study two cases whose disruptive technology was litigated in the highest courts in their jurisdictions to inform further research on how to elicit legal requirements for startups. The first case is the recent US Supreme Court case, *American Broadcasting*

[2] www.vdmbee.com

Companies v. Aereo.[3] Subsequently, the ITV vs TVCatchup case[4] strengthens the exploratory case studies by giving a European perspective and complementing the American case.

2.2.2 Value modeling

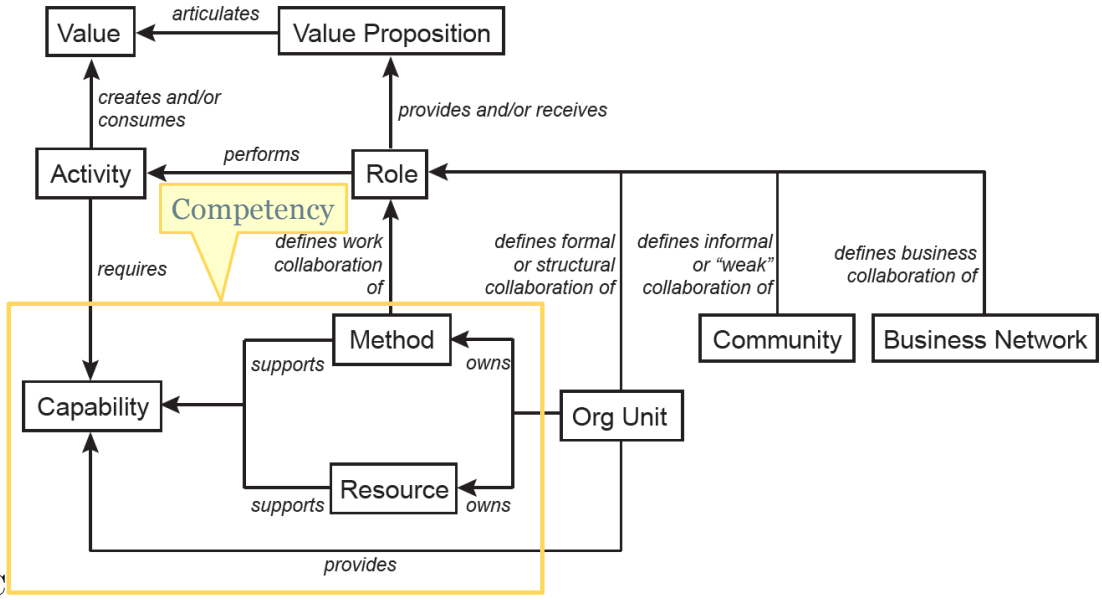

Figure 2.2: VDML Concepts

Value-based modelling is closely related to modelling the strategic goals of a firm. Indeed, the e^3-value is compatible with I* Yu [1997] a goal-modelling approach, so the two could be used interchangeably for mutual benefit. I* which stands for distributed intentionality, is founded on the philosophy that actors relate to each other from an intentional perspective as opposed to simple actions and information flows. While each actor has strategic goals to pursue, these are achieved via a network of intentional dependencies. This enables a shared understanding vital to the online environment where a number of enterprises have to collaborate to deliver the e-Service. Moreover, there is

[3] 573 U.S. (2014)
[4] 2015 EWCA Civ 204

usually no centralised authority so this approach helps to manage the complex decision making involved. Accordingly, we model different actors, the flow of the services and the attendant dependencies in order to identify synergies and vulnerabilities.

The work of Osterwalder and Pigneur [2002] is also instructive in this regard. Once the business goal is determined, it will be matched against the goals in the envisioned system to identify the corresponding compliance pattern(s). This helps determines the applicable regulations and the compliance behavior to be implemented. Figure 2.2 shows the value modeling concepts from VDML. An organization may have a particular competency that its roles apply in activities to create value. A *competency* is an ability the business has and applies in order to perform the work as represented by an activity. As seen in the Figure 2.2, a competency could either be a capability, method, or resource within an organizational unit.

A *capability* is the ability to perform a type of work e.g. fleet management or passenger seating. A *method* is a collaboration specification that defines the activities, deliverable flows, business items, capability requirements and roles that deliver a capability and associated value contributions. A *resource* is a thing used by an activity to produce an outcome e.g. a patent, a system, or a class of human resource with a certain skill.

As seen in Figure 2.2, a capability could be resource-driven or method-driven. Both resources and methods are potential sources of legal risks for an organization. However, we will concentrate on resources given that disruptive technology qualifies as a resource not a method. We therefore model the application of the technology as a resource with regard to the capabilities it enables and the consequent activities that create value within the organization.

Figure 2.3 shows the methodology by VDMBee, a value management platform implementing VDML. We concentrate on competency design as this is where resources are

modeled. VDMBee advice not to list all the competencies but to focus on those directly related to the strategies i.e. in the strategy map. The naming convention given is that a) the competence should reflect the relationship and b) it should be a combination of nouns (no verbs) e.g. "Passenger sitting". An activity requires a capability which the

Phase	*Module*	*Details*
Discovery	Unstructured discovery	What | Why | How?
	Structured discovery	- Vision statement & key values - Value network - Strategy map
Prototype	Business model plan	Create and scope a plan on VMP - Create plan, phase, and plan values.
	Value network design	How to design participant networks
		How to design value propositions
		How to design exchange of value
	Value stream design	How to design value streams to create and deliver value
	Competency design	How to design and/or apply competencies to perform activities in the value stream
	Value impact design & measurement	How to connect values and sub-areas of aggregation into a complete design of value impact.
		How to measure value impact
	Prototype alternatives & next phases	How to prototype alternatives in the Plan
		How to prototype next phase(s) in the plan
Adopt	Present	How to present prototyping results.
	Decide	How to prepare best for effective decision-making
	Initiate	How to use prototyping results as basis for initiating change.

Figure 2.3: VDMBee Methodology for continuous business model planning

business provides through a capability offer. The question for us is, what capability offers does a business offer through its technological resource and what is the legality of such an offer.

2.3 Legal risk analysis

This second part elaborates on the interpretive process. It begins by identifying the relevant legal domain and the applicable rules, followed by an analysis of the identified business competencies and activities against such rules.

2.3.1 Eunomos

To identify the legal rules, we first classify the identified activities within the governing domain of law. A LKMS could be incorporated at this stage. Boella et al. [2016] discuss Eunomos, a specific legal knowledge management system, that could act as a plug-in of a Business Process Management system, to handle multiple interpretations of norms. In Eunomos, the European Legal Taxonomy Syllabus ontology framework [Ajani et al., 2017] has been extended to include prescriptive norms, as opposed to the terminological definitions found in constitutive norms, that are covered by most existing systems. Humphreys [2016] and Humphreys et al. [2015] seek to address the resource bottleneck of populating ontologies by semi-automated extraction of constitutive norms (terminology) and prescriptive norms (legislative prescriptions) from the text of legislation, using Semantic Role Labeling (SRL).

2.3.2 Informal logic (argumentation schemes)

We adopt argument schemes from informal logic to model the steps of the legal risk analysis. This area of logic has been used to demonstrate how legal terms are defined by a sequence of argumentation moves, in which a given rule is refined by taking new exceptions and precedents into account. This approach is more intuitive and closer to legal reasoning and is therefore more likely to be appreciated by stakeholders from the legal fraternity. Mylopoulos et al. [1992] also use argumentation methods to re-

fine goals. In a similar vein, we apply the abstract argumentation schemes developed by Walton et al. [2008] to generate and characterize the rule patterns that typify a particular legal domain. The resulting templates are then instantiated with the particulars of a given business model. A model for legal argumentation is then deployed to determine the overall winning interpretation. It is this final interpretation that is used to derive a common pattern summarizing the context, the legal problem, i.e. risk of non-compliance, and the proposed solution. We refer to this triple of *context-problem-solution* as a *compliance pattern*. It specifies compliant behavior for the business model and subsequent models based on that pattern.

Our aim with compliance patterns is close to that of Walton et al. [2008] in modeling argumentation schemes to develop tools which can help people to construct a wide variety of arguments, improving their ability to protect their interests in dialogues, especially in the legal domain. They distinguish between two functions of argumentation schemes: as argument patterns useful for reconstructing arguments from natural language texts, and as methods for generating arguments from argument sources, such as legislation or precedent cases. In many fields, such as the law, solving problems requires several forms of reasoning. We apply the schemes in the latter sense to generate and represent different interpretive arguments that help to interpret the legal provisions. The schemes are also used as templates that capture the patterns of compliant behavior in a particular domain of law. The argument schemes help to generate and characterize the rule patterns that typify a particular legal domain. The resulting templates are then instantiated with the particulars of a given business model.

Patterns have been used before to address compliance: Kartseva [2008], Kartseva et al. [2010] uses patterns to prescibe controls in business models, while Elgammal et al. [2016] use patterns to specify compliance constraints on business processes. However, our work is novel, because it applies argumentation theory to capture the outcome of legal interpretation, tailored to a particular business model. The utility is in identifying

and reusing existing patterns for analyzing compliance and even more importantly, for tracking regulatory changes.

2.4 Legal theory

We now take a look at the different canons of interpretation introduced in chapter 1. Interpretations can take many thematic forms. Compare with Araszkiewicz [2013] that concentrates arguments from reason in civil law jurisdictions. We apply the four themes and their accompanying eleven canons (types of arguments) identified by MacCormick and Summers [1991]. Albeit ambitious, this study by leading legal theorists representing their individual countries, was conducted for over a decade in an effort to demystify and reconcile the cross-jurisdictional differences on interpretation. They offer sufficient arguments for our purposes to identify, and a classification to map the nature of legal reasoning as follows:

a **Linguistic arguments**: argument from ordinary meaning, argument from technical meaning;

b **Systemic arguments**: argument from contextual harmonization, argument from precedent, argument from analogy, argument from a legal concept, argument from general principles, argument from history;

c **Teleological-evaluative arguments**: argument from purpose, argument from substantive reason; and

d **Trans-categorical-arguments**: argument from intention.

2.4.1 Linguistic interpretation

Here the aim is to preserve the clarity and accuracy in legislative language and a principle of justice that forbids retrospective judicial rewriting of a legislature's chosen words [MacCormick and Summers, 1991]. The arguments therefore appeal essentially

to an ordinary meaning or ordinary words, or to a technical meaning of ordinary or technical words, whether legal or non-legal.

Argument from ordinary meaning: This is an argument from a standard ordinary meaning of ordinary words used in the specific section of the statutory text being interpreted. Where there is more than one standard ordinary meaning of an ordinary word used in the text, as is often the case, the general context of use in the section of the statute involved can usually be taken to indicate which meaning is linguistically appropriate.

The argument from technical meaning: These are arguments from a standard technical meaning of ordinary words, legal or non-legal. Whether an ordinary word or phrase is used with a standard technical meaning can frequently be readily determined from the general context of use in the section of the statute involved, from relevant history of the use of such words previously in the law or from other evidence. Technical terms here include technical legal terms, as well as the technical terms of other specialized activities..

All of the remaining types of arguments numbered below may:

1. Confirm a standard ordinary meaning of ordinary words or a standard technical meaning of ordinary or technical words;
2. Support a contrary special meaning in place of a standard meaning of ordinary words or a standard technical meaning of ordinary or technical words; or
3. Clarify and thus determine the statutory meaning where there is no determinative ordinary or technical meaning because of syntactic ambiguity, vagueness, evaluative openness or the like.

2.4.2 Systemic interpretation

This subset emphasizes the principle of rationality grounded in the value of coherence and integrity in a legal system [MacCormick and Summers, 1991].

Argument from contextual harmonization: This argument arises not only from the part of the statutory section in which the words in issue appear, but from usage in other parts of that section, in related sections of the same statute, and in sections of closely related statutes. It is noted that contextual harmonization arguments are frequently available although they may be limited when the relevant elements of statutory context conflict. For instance, one section of the statute may suggest a given meaning while still another indicates a contrary meaning. Poor drafting of a particular part or the whole statute may also limit this type of argument.

Argument from precedent: These arguments invoke precedents already interpreting the statute at hand. MacCormick and Summers [1991] note that this argument is widely influential in code systems, just as it is in the USA and in the UK, where it is sometimes said that a binding prior interpretation even becomes 'part of the statute'.

The argument from analogy: This is where a statutory provision is significantly analogous with similar provisions of other statutes, or a code, or another part of the code in which it appears, then even if this involves a significant extension of or departure from ordinary meaning, it may properly be interpreted so as to secure similarity of sense with the analogous provision *either* considered in themselves *or* considered in the light of prior judicial interpretations of them. MacCormick and Summers [1991] observe that the argument from analogy appears to be stronger on the second hypothesis, where it incorporates a version of the argument from precedent. In general, this argument cannot be used to: 1. extend a criminal prohibition 2. extend a statute imposing a tax or 3. expand an explicit statutory exception.

Logical-conceptual arguments: The governing idea here is that, if any recognized

and doctrinally elaborated general legal concept is used in the formulation of a statutory provision, it ought to be interpreted so as to maintain a consistent use of the concept throughout the system as a whole, or a relevant branch or branches of it [MacCormick and Summers, 1991]. Examples given of such concepts are terms such as *contract* or *corporation*. The crucial point is for legal concepts to receive the same treatment unless there is good reason not to do so.

The argument from relevant principles of law: These refers to those legal principles potentially or actually operative within the field in which the interpretational issue arises. MacCormick and Summers [1991] observe that this argument is influential in all countries. They distinguish three senses of 'principles of law':

1. *Substantive moral norms:* previously invoked by judges when interpreting statutes or otherwise, independently or as presumptions of legislative intention: for example, no person shall profit from his own wrong (equity).
2. *General propositions of substantive law widely applicable within a particular branch of law*: for example, in some systems the principles of 'first in time', 'first in right' in personal property and security law, *nulla poena sine lege* in criminal law, 'no liability without fault' in tort law and 'good faith' in contract law.
3. *General propositions of law, substantive and procedural widely applied throughout the legal system:* Examples of general procedural principles are those requiring fair notice and a fair hearing before an official may take adverse action against a citizen. Examples of such substantive principles are those protecting the rights to freedom of association and speech, freedom from discrimination on racial or religious grounds, and the right to free movement.

Historical argumentation: This argument refers to the special history of the reception and evolution of the statute [MacCormick and Summers, 1991]. Such arguments presuppose that the statute has come to stand for something rather different from

what it was originally designed for hence the need for an evolved understanding on the purpose of the statute or the conception of rightness it embodies. It is noted that in common law systems, this argument may not be very wide-ranging yet quite important when it becomes operative. Conversely, it has a wide effect in civil law systems with regard to the evolved understanding of the codes, or major parts of them.

2.4.3 Teleological-evaluative interpretation

This level of argumentation emphasizes the need for practical reasoning in terms of the values or principles underlying the legal system.

The argument from purpose: The governing factor is that, if a particular purpose can be identified when applying a statutory provision or statute in a concrete case, the interpretation given ought to be in a manner compatible with such purpose. MacCormick and Summers [1991] note that the purposes identified are evaluational at least in the sense that they provide a ground for evaluating one interpretation as better than another. They also note that the force of this type of argument derives mostly from the fact that the argument conceives of the legislature as an instrumentalist body seeking to serve ends through apt means.

The argument from substantive reasons: These arguments seek to invoke the moral, political, economic, or other social considerations. MacCormick and Summers [1991] note that their weight or force is not essentially dependent on any authoritativeness that the reasons may also have. They give the following scenarios where such argumentation is most frequent:

1. The other types of argument, especially linguistic arguments are not available (or only limitedly available) because of ambiguity, vagueness or the like;
2. General clauses or other evaluative phrases must be filled out; or
3. Conflicts between arguments must be resolved.

Two varieties of substantive reasons might be distinguished:

1. Particular ones informing the content of, or relevant to the immediate interpretation of, a statute; and
2. General ones stating the rationales for institutions and processes such as democratic values, fair process and the rule of law.

2.4.4 Trans-categorical interpretation

The argument from intention: These arguments pursue the effect that the legislature *intended* that the words in issue have a given meaning:

1. In accordance with some appropriate sense of intention; and
2. In respect of some element which serves as the object of intention i.e., any core element of any of the 11 argument types such as an ordinary meaning, general principle or purpose.

MacCormick and Summers [1991] note that the higher courts of all countries invoke certain 'presumptions' as to legislative intention. Among such presumptions are that:

1. the legislature knows the national language and uses ordinary words or technical words accordingly;
2. the legislature intends its enactments to be constitutionally valid;
3. the legislature does not intend absurd or manifestly unjust outcomes;
4. the legislature does not intend a statute to have retroactive effect;
5. every penal (non-regulatory) statute requires 'mens rea'; and
6. treaties are not to be infringed.

In the UK and the USA, most such presumptions are rebutted only by very clear contrary language.

2.4.5 Gap-filling

Sometimes, more may be demanded as the interpretive process is not always sufficient. MacCormick and Summers [1991] differentiate interpretation from gap-filling, which is necessary to remedy intrinsic and extrinsic gaps in legislation resulting from new forms of legal life for instance, in economic and technological regulations. Our first case study in section 7.2 presented a case for gap-filling. The study is of a Nairobi startup BitPesa, which is using Bitcoin to conduct money remittance services. There is no regulatory framework in Kenya to handle cryptocurrencies. The framework may thus be limited to generating the arguments from intention that the legislature or judicial doctrine may have used to fill the resulting gaps.

2.4.6 Legal argumentation

To reconcile the resulting interpretations, we apply a simple but economical model for the interaction of interpretive arguments subsequently identified in MacCormick and Summers [1991]. The model's hierarchical order, the arguments, and their respective categories rest upon and implement values of special significance in the legal order as follows:

1. Consider arguments in the following order: 1. linguistic arguments, 2. systemic arguments, 3. teleological-evaluative arguments.
2. Accept as *prima facie* an interpretation at one level before proceeding to the next. At level (3), only accept the argument supported by the whole range of arguments.
3. Take account of arguments from intention and other trans-categorical arguments as grounds, which may be relevant for departing from the *prima facie* ordering.

2.4.7 Requirements engineering (EARS framework)

A recent systematic literature review Ghanavati et al. [2011] shows that RE techniques, especially Goal-Oriented Requirements Engineering (GORE) methods have been used to extract and model legal requirements or build business process compliance frameworks. Most of these approaches apply i^*-based or TROPOS-based notations such as i^* itself Rifaut and Dubois [2008], *Nòmos* Siena et al. [2009], SecureTropos Ishikawa et al. [2009], Secure i^* Krausova et al. [2009], Goal-Based Requirements Analysis Method (GBRAM) Breaux and Antón [2005] or the Goal-oriented Requirement Language (GRL) Ghanavati et al. [2007], Ghanavati et al. [2009], Shamsaei et al. [2011]. These approaches mainly work on achieving similar behavior for legal requirements as with other types of requirements such as system, business or technical requirements. They try to bind the concepts of legal goals and intentions with stakeholders' goals and intentions. As such there is no in depth handling of legal interpretation.

Research in RE is more concerned with tackling ambiguities in elicited requirements [Massey et al., 2014, Christel and Kang, 1992]. Work by Ghanavati and Hulstijn [2015] shows how a closer collaboration of these developing domains could help manage and handle the intricacies of the resulting interpretations. Such collaboration sets the stage for better definition of constraints for compliance as a non-functional requirement and thereby, more compliant software systems. However, we still need systematic methods to explore the solution space in terms of the possible interpretations that could result from applying a given legal provision.

Even then, we find the Easy Approach to Requirements Engineering (EARS) from RE quite useful in order to express the final compliance patterns in clear succinct expressions that are more user-friendly to engineers as opposed to legal jargon [Mavin et al., 2009]. The general syntax is: ⟨optional preconditions⟩⟨optional trigger⟩ the ⟨system name⟩ shall ⟨system response⟩. It is expounded into six patterns as follows:

1. **Ubiquitous requirements**: such a requirement has no preconditions or trigger. It is not invoked by an event detected at the system boundary or in response to a defined system state, but is always active.
2. **Event-driven requirements**: initiated only when a triggering event is detected at the system boundary.
3. **Unwanted behavior**: failures, disturbances, deviations, defined using a syntax derived from event-driven requirements designated by keywords 'If' and 'Then'.
4. **State-driven requirements**: active while the system is in a defined state. They are denoted by the keyword 'While'.
5. **Optional features**: designated with the keyword 'Where'.

Mavin et al. [2009] instruct that requirements with complex conditional clauses can be achieved by combinations of the keywords When, While and Where to specify richer system behaviors. They can also be used within If-Then statements.

2.5 Compliance patterns

The foregoing review is broad and shows that more is needed to understand how legal interpretations and conceptualizations are formed; what understandings are shared and by whom, which are contested and between whom, and the strategies used in developing or contesting those understandings. Such understanding will enable us to (1) assess how existing laws are likely to impact new innovations (2) construct a characterization of the regulatory process as a whole and (3) enable the stakeholders involved to make sense of that process. Understanding such a process requires understanding the detailed level of its operation, the perceptions of its participants, and how those 'internal' processes interact with a broader context [Black, 2002]. We aim to bridge this gap with an approach that extends the current methods for compliance management as applied to regulatory compliance.

The final requirement is to manage the related legal risk using a *context-problem-solution* structure. The context is summarized by the technological competence and consequent activity driving the value model. The problem is identified as a legal risk arising from a certain activity or competence of the model, and the solution is given by listing the final requirement.

2.5.1 The context

We will use value models and tools to answer the first research question of modeling the business in order to understand how the technology developed is applied and the competencies it enables. Such competencies are the inputs of the legal analysis.

2.5.2 The problem

The analysis process will help us understand the legal risk the startup faces. Eunomos or any other suitable LKMS can act as a source of legal rules. The rules will be analyzed to determine the requisite compliance behavior expected. We characterize this process using argument schemes. The interpretive arguments used in this process will also be represented using argument schemes. The final interpretations will be recast onto the original rules to form prescriptions applicable to the value model. Such prescriptions will also be translated into systems requirements for easier mapping onto business processes in the value model.

2.5.3 The solution

For the final solution to be adopted in the business, it needs to be applied to the value model in a form that the business can appreciate i.e. via a value management platform e.g. VDMBee.

2.6 Conclusion

The foregoing literature review presents us with adequate tools with which to design a robust compliance pattern framework. Argument schemes from informal logic can be used to bridge the gap between the principles of interpretation in legal theory with the legal rules they interpret. Dialectical approaches, also from informal logic can be used to trace the interpretive steps used in legal reasoning in judicial proceedings and similar forums. A model for legal argumentation can be deployed to determine the overall winning interpretations. It is this final interpretation that is used to derive a pattern summarizing the context, the legal problem, i.e. legal risk, and the proposed solution. We refer to this as a *compliance pattern* Muthuri [2016], which specifies compliant behavior for the business model and subsequent models based on that pattern. This is a novel application of argumentation theory to capture patterns of compliant behavior tailored to a particular business model. The utility is in reusing these patterns while analyzing compliance and even more importantly, while tracking regulatory changes which alongside the costs of compliance continue to rise steadily over the decade.[5]

[5]See for instance, Thomson Reuters, Cost of Compliance Reports 2012-2016.

Chapter 3

Case Studies: Motivation

This chapter will consider the startup application domain and two cases litigated at the highest courts in their jurisdictions in order to answer research questions 2(a,c) and 3(a).

3.1 The Aereo case

The facts of this study are presented in the case of *American Broadcasting Companies v. Aereo*.[1] Aereo is a media technology startup based in New York City that enabled subscribers to view live and time-shifted streams of over-the-air television on Internet-connected devices. Subscribers paid $8 to $12 a month to rent a coin-sized TV antenna stored in Aereo's warehouse. Users could then stream near-live television and record programs from major broadcasters by selecting the relevant broadcast signal. Aereo's system would pick up the relevant broadcast signal, translate its audio and video components into digital data, store the data in a user-specific file, and transmit that file's contents to the subscriber's laptop, tablet, or other device displays just as an ordinary television would. The Supreme Court rejected the Second Circuit Court of Appeals

[1] 573 U.S. (2014)

decision 6-3, to hold that Aereo had violated copyright laws by capturing broadcast signals on tiny antennas stored in warehouses and transmitting them to paying subscribers. Given the decision, the company was forced into bankruptcy in November 2014.[2]

3.1.1 Legal requirements for Aereo's technology

How did the Supreme Court determine the legal requirements that Aereo's technology ought to have complied with? The Court gives its judgment in a number of steps that highlight the legal reasoning. It begins with a four page summary of the case then proceeds to give its opinion over 18 pages. This followed by the dissenting opinion which is delivered over 13 pages. We now look at the summary part to answer this question. The Court begins the judgment by stating two prescriptive rules as follows:

> 'The Copyright Act of 1976 gives a copyright owner the "exclusive righ[t]" to "perform the copyrighted work publicly." 17 U. S. C. §106(4). The Act's Transmit Clause defines that exclusive right to include the right to "transmit or otherwise communicate a performance . . . of the [copyrighted] work . . . to the public, by means of any device or process, whether the members of the public capable of receiving the performance . . . receive it in the same place or in separate places and at the same time or at different times." §101.'

The second rule extends the first rule and may help to make it more comprehensible to non-lawyers as they can associate a more familiar term *transmit*, to the technical legal phrase *perform the copyrighted work publicly*. The court then summarized the technology involved as follows:

[2] Other media startups hailed Aereo's two year battle with the broadcasters association which highlights Aereo's unique position in affording the legal resources in the first place. Indeed, many other media startups are trying to disrupt the $167 billion American Television Market.

> 'Respondent Aereo, Inc., sells a service that allows its subscribers to watch television programs over the Internet at about the same time as the programs are broadcast over the air. When a subscriber wants to watch a show that is currently airing, he selects the show from a menu on Aereo's website. Aereo's system, which consists of thousands of small antennas and other equipment housed in a centralized warehouse, responds roughly as follows: A server tunes an antenna, which is dedicated to the use of one subscriber alone, to the broadcast carrying the selected show. A transcoder translates the signals received by the antenna into data that can be transmitted over the Internet. A server saves the data in a subscriber-specific folder on Aereo's hard drive and begins streaming the show to the subscriber's screen once several seconds of programming have been saved. The streaming continues, a few seconds behind the over-the-air broadcast, until the subscriber has received the entire show.'

It is evident that the court is not concerned with the technicalities of Aereo's technology, rather it tries to describe the resulting capabilities and activities that such technology makes possible. The Court then proceeds to note the legal action in question by stating that the Petitioners, who are television producers, marketers, distributors and broadcasters that own the copyright in many of the programs that Aereo streamed, sued Aereo for copyright infringement by seeking a preliminary injunction against Aereo.

Consequently, the Court notes the legal claim that the Petitioners make i.e. that Aereo was infringing their right to 'perform' their copyrighted works 'publicly'. The quoted words are instructive as the court is already pointing the reader to the terms on which the Petitioners' case either succeeds or fails. It is important to note that since this is an appeal, the Court does not frame the issue to be decided. However, at the initial stage of litigation, a lower court may have to frame the issues to be

determined.

The Court then concludes by giving its holding in two parts. The first is that *Aereo performs the Petitioners' works within the meaning of the transmit clause.* This means that the Court bases its decision on the second rule which is more specific and closer to Aereo's activities. The Court supports this holding with three limbs a) that in the past, congress had purposefully changed the law to overturn two Supreme Court holdings that ruled in favor of firms analogous to Aereo. b) Congress had made three changes to bring the activities of cable system activities within the Copyright act i) specifically amended the Copyright Act to clarify the term 'perform', ii) enacted the transmit clause, and iii) enacted a complex licensing scheme which sets out the conditions, including compulsory fees under which cable system may retransmit broadcasts to the public. c) The Court determined that Aereo's activities were substantially similar to those of CATV companies which it has previously held to perform.

The Court's second holding was *that Aereo performed the Petitioners works 'publicly'.* It supported its decision by abstracting away from Aereo's technology arguing that the totality of Aereo's recipients fit the definition of public under the transmit clause, even if Aereo claimed that its technology only enabled private transmissions to its subscribers. The Court concluded its holding by claiming that this was a limited ruling that would not affect the emergence of other different kinds of technologies. The court then proceeds onto the full opinion.

The full opinion begins with a synopsis that summarizes the legal rules, the technology, the legal action and legal claims being made against Aereo, and the Court's ruling. The Court then proceeds to expound on each of these limbs in the rest of the judgment. This is followed by the dissenting opinion as the Court's decision was not unanimous.

3.1.2 Reconciling conflicting interpretations in Aereo

A good example of how the Court reconciles conflicting arguments is seen in the second limb of the case i.e. whether Aereo's performance was public. This was part of the Petitioners' claim and it had to be proved independently for the whole infringement claim to succeed. Aereo relied on its technological capabilities to show that its transmissions did not fall under the statutory provisions thus: *Aereo claims that because it transmits from user-specific copies, using individually-assigned antennas, and because each transmission is available to only one subscriber, it does not transmit a performance "to the public".*

The Court solved the conflict by first making reference to the objectives of Congress when it enacted the transmit clause. This allowed it to abstract from the technology in question to capture Aereo's activities under the clause. The rationale that allows the court to make this abstraction is a canon from legislative intention. As in this case, courts will not usually make explicit reference to the canons being applied while writing opinions. This is because the judge(s) audience when writing opinions is made up of lawyers and other legal minds, not the general public. They understand as between themselves the canons at at play.

3.1.3 Applying interpretations in Aereo

The Court used the legal action and legal claims made against Aereo, to determine the legal rules at play. They subsequently analyzed Aereo's activities to assess whether they fell under the defined rules. In doing so, the Court applies a number of canons such as analogies to fill the gaps between the text of the law and Aereo's activities.

3.2 The TVCatchup case

The facts of this study are presented in the case of *ITV and others v. TVCatchup.* [3] TV Catchup Ltd (TVC) runs a website which allows ordinary viewers to watch live UK television including broadcasts by a number of free-to-air broadcasters on their own computers, smart phones and game consoles. This case is analogous to the Aereo case but even more complex as it involves multi-level jurisdictions between the European Union and a Member State. It also presents an uncommon opportunity for legal interpretation as it involved two references to the CJEU for interpretation, first by the English High Court and later by the Court of Appeal. This presents us with significant argumentation which makes it highly relevant for our purposes.

3.2.1 Legal requirements for TVC's technology

The first judge, Lord Justice Kitchin begins with a short introduction, the background, and an outline of the issues on appeal. No holding is given yet. He proceeds to set out the legislative framework followed by the legislative history. He then sets out the second reference to CJEU, considers TVC's appeal from the High Court that is unlikely to be affected by the judgment of the CJEU, then concludes his case. His judgment covers 32 pages. The other two judges agree with the first judge in principle but differ in rationale. They give shorter judgments of two and five pages respectively on the issues differed.

The introduction presents each party's appeal from the High Court ruling and then sets out the background of the case. TVC operates an internet-based, live-stream service of broadcasts and films in which the broadcasters own the copyright. The broadcasters alleged TVC had infringed the copyright in their films and broadcasts by communicating these works to the public contrary to s.20(1)(b) and s.20(1)(c) of the

[3] [2015] EWCA Civ 204

Copyright, Design and Patents Act 1988 (CDPA).

3.2.1.1 High Court ruling

On the issue of communication to the public and the scope of s.20 of the CDPA, the judge said it was not clear whether there was a communication to the public where an organization (herein TVC), acting for its own profit, intervened and retransmitted a broadcast on the internet to members of the public who were in fact already able to access the original signal in their own homes using their own television sets. He therefore referred the issue (together with various other issues which have no bearing on this appeal) to the CJEU for guidance.

3.2.1.2 The High Court's reference to the CJEU

The CJEU held[4] that the concept of *communication to the public* within the meaning of the Information Society Directive[5] (the Directive) covered the unauthorized retransmission of a broadcast by way of internet streaming, even when subscribers to the internet streaming service were within the area of reception of the original broadcast and could therefore, lawfully receive the original broadcast on their television sets.

Despite the CJEU's guidance, the High Court in England found that TVC's streaming service over fixed-line internet had not infringed the broadcasters' copyright in their broadcasts. This was because in the High Court's view, TVC had a defense under section 73 of the CDPA. Section 73 provides that copyright in a wireless broadcast by the UK free-to-air broadcasters, made from a place in the UK, is not infringed to the extent that the broadcast is received and immediately retransmitted by 'cable' to the same area that the terrestrial broadcast was transmitted (the 'reception area' defense). In the High Court's view, streaming over fixed-line internet connection fell within the

[4]Case C-607/11
[5]Directive 2001/29

definition of 'cable' for the purposes of section 73. However, the High Court held that the meaning of the term 'cable' in section 73 did not extend to streaming services to mobile devices over mobile networks. Consequently, it found TVC's mobile services to have infringed the broadcasters' copyright.

3.2.1.3 The appeal

Both parties appealed the High Court decision to the English Court of Appeal. The Broadcasters argued that TVC's defense to infringement did not extend to streaming over the internet. TVC argued that its defense to infringement extended to mobile devices in addition to the internet.

3.2.1.4 The Broadcasters' appeal

The broadcasters appeal challenged the High Court's decision that the section 73 defense applied to TVC's internet streaming services. They claimed that the term 'cable' has a uniform and precise meaning in EU law of *a dedicated cable system operated by traditional cable operators*. This is an argument from legal-concept discussed in subsection 2.4.2 which meant that the High Court was wrong to extend the term to internet streaming over fixed communications. They argued that the section 73 defense provided under English law could only be permitted under EU law if it fell within Article 9 of the Directive. Article 9 qualifies the exclusive right of *communication to the public* by making it clear that it is without prejudice to provisions concerning, among other things, *access to cable of broadcasting services*, which would continue to apply following the implementation of the Directive.

The broadcasters argued that the phrase *access to cable of broadcasting services* in Article 9 of the Directive did not extend to and, therefore, did not permit an exception of the breadth of section 73 *reception area* defense given to it by the High Court.

Consequently in interpreting national legislation in line with the *Marleasing principle*, which requires national legislation, where possible, to be construed in conformity with EU law, the scope of section 73 should be limited to the retransmission of broadcasts on traditional cable systems operated by cable programme providers. One aspect of the broadcasters' appeal led to discussion of whether the *reception area* defense was covered by Article 9 at all. The broadcasters argued that Article 9 was limited to cable access to retransmit broadcasts to geographical areas which had poor broadcast reception - another exception to copyright provided for in section 73 of the CDPA and referred to as the *must carry* exception.

The outcome of an interpretation of Article 9 therefore had a potential conclusion that the *reception area* defense did not comply with EU law on any interpretation. The Court of Appeal came to the conclusion that the meaning of Article 9 was not clear. Consequently a further reference to the CJEU was made regarding whether it covers both *reception area* and *must carry* exceptions. It also asked for the scope of the meaning of the term 'cable' to be clarified. We highlight the questions focused on the meaning of the term:

1. Does the quoted phrase (This directive shall be without prejudice in particular to...*access to cable of broadcasting services*) permit the continued application of a provision of national law with the scope of 'cable' as defined by national law, or is the scope of this part of Article 9 determined by a meaning of 'cable' that is defined by EU law?
2. If 'cable' in Article 9 is defined by EU law, what is the meaning? In particular:
   (a) Does it have a technologically specific meaning, restricted to traditional cable networks operated by conventional cable service providers?
   (b) Alternatively, does it have a technologically neutral meaning which includes functionally similar services transmitted via the internet?

(c) In either case, does it include transmission of microwave energy between fixed points?

The main inquiry is whether the meaning of the term *cable* extends to streaming over the internet by fixed-line communications.

3.2.1.5 TVC's appeal

TVC appealed the High Court's finding that section 73 did not extend to live streaming to mobile devices via mobile networks. TVC sought to draw a distinction between their transmission to the mobile mast, which was wholly via 'cable', and what they termed as a private communication between the mobile network and the consumer at the point between the mobile mast and the consumer's mobile device. Alternatively, they argued that section 73 should apply as the retransmission was 'substantially' by cable. The Court of Appeal rejected both of these arguments and upheld the High Court's decision on this point.

3.2.2 Reconciling conflicting interpretations in TVC

A number of terms were heavily debated key of which were a) cable and b) access to cable of broadcasting services. On the meaning of *cable*, it is instructive to note the Court highlight that since there is no definition of the term *cable* for purposes of the *reception area* defense, the word can bear an ambulatory or movable meaning. ITV on the other hand argued that there was no reason why the cabling system inherent in the internet should not be regarded as cable for purposes of the defense. This is a linguistic argument from ordinary meaning of a term. They supported this with the contention that the CDPA had been amended severally to make its provisions technology neutral, which meant it redefined broadcasts to encompass all services relating to transmission by electronic means whether wired or wireless. This is a systemic argument from

principle.

The principle of *technology neutrality* is an EU law principle in European electronics communications which states that *the same regulatory principles should apply regardless of the technology used.* This tries to prevent regulators from using the regulatory framework to push the market towards a desired optimal structure thereby allowing companies freedom to adopt whatever technology is most appropriate to achieve the result. The expectation was that after implementation of the Directive across the EU, the term cable in UK law would have the same meaning as that of EU law. However, it seems that the UK has a wider meaning than that of the EU and unfortunately, the Court could not ascertain the meaning ascribed by the EU hence the reference to the CJEU for clarification. Depending on the interpretation the CJEU gave, TVC would either maintain or lose its defense to infringement.

A number of canons are brought into play to try reconcile the different arguments. As with Aereo, most of these arguments are not explicitly stated except for the *Marleasing principle* possibly to guarantee stability of the underlying legal system i.e. that EU law takes precedence over a Member State's law, and thereby the soundness of any subsequent interpretations. Relatedly, the broadcasters citing two directives,[6] insist that the term *cable* has a settled and autonomous meaning throughout the European Union *acquis*, which is to identify a particular means for conveying transmissions encompassed in the term 'wire' but of a more limited scope. This is a systemic argument, specifically the logical-conceptual argument. They seem to draw this interpretation from a wider argument from legislative intention that EU law clearly distinguishes between broadcast transmission services from information society services.

The Information Society Directive provided for an exemption that allowed Member States to retain some existing provisions. They use this to support their main contention that the EU legislature could not have intended to exempt national provisions

[6]Directives 92/100/EEC and Directive 9398/EEC

concerning internet retransmissions, an activity they sought to harmonize under that Directive. That is why they deem *access to cable of broadcasting services* to refer only to the traditional form of cable and thereby maintaining the distinction between the older broadcast transmission services outside the Directive, from the newer information society services. This is teleological argument from purpose. All these arguments support the broadcasters' use of a linguistic argument from the technical meaning to interpret the term *cable*.

The third Judge, Lady Justice Arden supports this view by noting that Article 9 does not mention copyright at all. Additionally, the recital behind Article 9, recital 60, does not make reference to copyright as such. She is using a teleological argument from purpose, which looks at other sources (recital 60) to clarify the legislature's purpose when enacting a particular provision. The import is that Article 9 may not have anything to do with defenses to copyright infringement. If this is the case, it would support a conclusion that the legislature was more concerned with access to infrastructure in the Member States. *Access to cable of broadcasting services* would therefore mean, *access to infrastructure*. She supports this interpretation by arguing that Member States have different levels of capability and therefore different legislation about how they use their cable networks. This is a systemic argument from principle i.e. the proportionality principle that divides subject matter jurisdiction between the Union and its Member States. This helps her to conclude that if access refers to physical infrastructure, it does not include internet transmission using fiber-optic wires but a reference to the CJEU would be necessary to apply a conforming interpretation if it is possible to do so.

3.2.3 Applying interpretations to TVC

On the 1st of March 2017, the CJEU ruled that Article 9 must be interpreted as not covering, and not permitting, national legislation which provides that copyright is not infringed.[7] This is interesting given the provisional view given at the English Court of Appeal by the second judge Lord Justice Underhill that if the EU Directive legitimizes internet retransmissions, but only those of traditional cable, it would be possible to read the language of the UK law conformably. However, this would mean that the same words would have a different meaning before and after domestication of the Directive in the UK. However, if the defense is not accommodated within EU law, the Justice opined that it would not be possible to simply strike it down as it represents a clear legislative choice on a primary policy issue. Unfortunately, we will not see how this plays out as the UK has recently decided to repeal the section 73 exception after a public consultation that determined that there was no longer a need to retain it.

3.3 Conclusion

There are a number of takeaways from the above exposition. To begin with, it is not always clear what the law is and even for a single term, it may take a significant evaluation with several appeals delving into the legislative history and purposes of the legal framework to ascertain the correct meaning. Aereo may have believed from the start that terrestrial or free-to-air broadcasts were part of the public domain. TVC seems to have held the same belief in regard to retransmitting such broadcasts on the internet. This is further complicated where a number of jurisdictions are involved. In the lower court cases, Aereo won in some states and lost in others. The part winnings of TVC in the UK courts were eventually lost at the CJEU. It may be that startups, particularly those without resources to seek legal counsel, may base their business

[7] Case C-275/15

models on decent but erroneous presumptions from the legal perspective.

Secondly, there are many underlying considerations incorporated while each provision is being drafted and sometimes this could inadvertently lead to conflicts where different considerations were not balanced for instance in TVC where subsequent EU law may annul legitimate rights of a Member State's entity unintentionally. It is therefore imperative to have a method that will begin to help legal knowledge engineers (a) understand the different arguments at play and (b) apply the different interpretive arguments to legal provisions that they are working with to promote a more accurate reading and application of the law in order to gauge their impact on a firm's business model.

Another interesting observation from the TVC case is that over the long-running course of this litigation, the broadcasters have developed their own live streaming services to fill the void. This may defeat the competing business models of subscription live streaming services after all. The role of technology here, brings out the stack contrast between law and economics. The law has to think about posterity and preserve certain ways of thinking which gets complicated when technology gets involved. On the other hand, economists think about efficiency, and technology is currently driving that efficiency.

Finally, judicial interpretation is one of the few clear ways to achieve legal certainty on a matter. However, even the highest courts can shy away from giving a succinct criteria which stakeholders can follow. This may be from their lack of sufficient capacity to interpret the complexity of the technology involved. Even then, we have seen that courts will concentrate on the functionality of the technology enabling a given business model. It will then proceed to determine the appropriate legal rules and evaluate the consequent legal claims. This will then invoke an interpretive process to determine which party's arguments will prevail. In doing so, it implicitly, and sometimes explic-

itly deploys canons of interpretation in analyzing these arguments in order to balance competing interests.

This calls for resources for a) legislators to understand and legislate sufficiently for emerging technologies and b) for lawyers to decode the resulting regulatory frameworks in a manner specific enough to help startups managing the attendant legal risks. Following these preliminary studies using case law, we sought to delve into more research to investigate our empirical claim that startups are unable to manage their legal risks.

Chapter 4

Survey on Legal Risks

4.1 Introduction

In addition to the foregoing exploratory studies using case law, it was necessary to conduct a survey of startups in the application domain to get user requirements for the thesis. A template of the survey is attached in Appendix A.

4.1.1 Purpose of study

Our objective in conducting this survey was necessitated by the research questions to understand how startups manage legal risks i.e. how they make compliance decisions and how they interpret the law in that process. This will help develop precise requirements with the understanding of where best to focus the conceptual framework. The survey will help us understand different perceptions as follows:

- How do founders make compliance decisions? This may provide empirical grounding for other theory-backed efforts to improve that decision making process.
- Understanding the issues that founders have in decision making – both by explicitly asking what aspects participants perceive to be most critical during their

decision making process and investigating the characteristics of that process, we can have a more empirically grounded list of local points for research and practical efforts to address.

- Understanding what to compare their experience with for instance against SMEs or other more established firms.

Our research objective is to study these aspects and in doing so, elicit data that gives insights into the general operations of a startup as well. We will do so by performing qualitative work with a diverse amount of participants active as startup founders or executives.

4.1.2 Brief description of study

The study was conducted by the author by approaching startup founders in Luxembourg, Kenya and Italy from October 2015 to October 2016. Majority of those startups were housed in technology incubators and accelerators where they benefit from economies of scale from shared administrative, marketing and other similar resources, most important of which include facilitating easier visibility to potential investors.

4.2 Study methods and design

We chose a survey conducted through an online questionnaire in order to make it as convenient as possible particularly given that our main target, founders, are usually very busy and inaccessible. Participants were offered no reward except a copy of the research results, when available.

4.2.1 Sampling method

We specifically targeted founders or members of the top leadership as they were more likely to have had direct experience in decision making. Owing to the exploratory nature of the research, time and financial constraints, the sampling was opportunistic and emergent as we gained more insight into the domain. We approached startups located in the different locations determined by the author's mobility track which for the duration of the study were Luxembourg and Italy. The sampling was also emergent as we gained more knowledge of the startup domain. For instance, having observed that some startups, especially those in developing countries were able to thrive from the lack of legislation, we also approached startups located in the author's home country i.e. Nairobi, Kenya which also has the advantage of being one of Africa's thriving technology hubs alongside Ghana, Nigeria and South Africa. This may have an effect of stratifying the sample.

4.2.2 Data collection method

The questionnaire was made up of three main parts, a) building a professional profile of the participant, b) understanding the difficulties they face in compliance decision-making, and c) testing how they feel about certain aspects of the decision-making process.

4.2.2.1 Business profile

The profile of the participants was build based upon the following questions:

1. What is the name of your startup?
2. What is your position in the firm?
3. Where is your startup based?
4. In what sector do you categorize your startup?

5. How many years has your startup been in operation?
6. Is there a designated legal officer within the company, or an external legal expert you consult?

4.2.2.2 Business model

The second part dealt with the business model. These were more specific and mostly open questions about the difficulties participants face in identifying, interpreting and applying the law while modeling decisions in the decision-making process . Finally, we

Question		Type
1. How does your company (intend to) make money? Have you finalized decisions about this business model, or is it still open?		Open
2. Have you identified the laws or regulations that may affect this business model?		Closed
Yes	2.1. What are the difficulties associated with such laws or regulations?	Open
No	2.2. What are the difficulties in identifying such laws and regulations?	Open
3. What are the main legal risks with regard to your startup's business model? (We're focusing on the legal risks related to the business model as opposed to others e.g. of setting up a business etc. which are common to all)		open
4. Do you consider these risks when you are designing/changing your business model?		Closed
Yes	4.1. Were you able to determine the possible ways your business model could have been affected?	Open
No	4.2. Could you give some reasons why it was difficult to consider such risks?	Open
5. Were you able to propose appropriate modifications of the business model to solve this?		Open
6. Did you work with any internal or external legal expert or lawyer in this process?		Open
7. What makes legal compliance challenging for you?		Open
8. What are the most important (or critical) aspects of making sure that your business model is legally compliant (hereafter "compliance decision")?		Open

asked participants to judge to what extent they agreed with a number of statements on a 5-point Likert scale (ranging from ‘strongly disagree’ to ‘strongly agree’). These were created to give insight into how participants feel about decision making aspects detailed below. To what extent do you agree with the following statements when applied to compliance decisions at the early-stage entrepreneurship?

1. The law is clear as regards our business model.
2. It is easy to determine which legislation is applicable.

3. We have taken a crucial decision about the business model without knowing exactly what the law is.
4. Compliance related decisions are often refined at a later stage.
5. When we make a compliance decision, it is final.
6. Time constraints do not allow us to consider all decision alternatives.
7. We prefer discussions with lawyers or (other stakeholders) to base our compliance decisions.
8. It is easy to interpret what rules the legislation provides and how they affect our business model.
9. We prefer to base compliance decisions on other business-related data.
10. Compliance decisions often have to be reconsidered, which also affects other decisions.

We also asked participants whether we could get back in touch with them in regard to testing the legal knowledge management system developed with the help of the questionnaire. If they agreed, we asked for their email.

4.2.3 Data analysis method

The results will be classified based on themes developed from the research questions. The objective is to explore aspects regarding the ITxLaw misalignment discussed in subsection 1.2.1. The following hierarchical code was used in identifying different aspects of the theme.

1. How accessible is the law to the startup domain?
   (a) Access to legal services: affordability, value-legal certainty.
   (b) Complexity: identifying legal provisions, interpreting and reconciling multiple interpretations, applying legal interpretations to business models.
2. Role of technology in aggravating access to the law by startups:

(a) Place of compliance in business model formulation

(b) Prioritization of legal advice: time and other constraints, adaptation of business model to avoid legal risks.

This coding will be used to build an overview of the general trend for the answers. After doing so, we will go through the answers again to find answers that specifically conflict with this trend, and use them to discuss the attitudes of the participants towards the questionnaire. To estimate the general tendency for each answer in the Likert, we will calculate the median of each question's answers (given the ordinal nature), which we use to determine whether the majority of participants had a polarized (i.e., strong agreement or disagreement) or neutral attitude towards them.

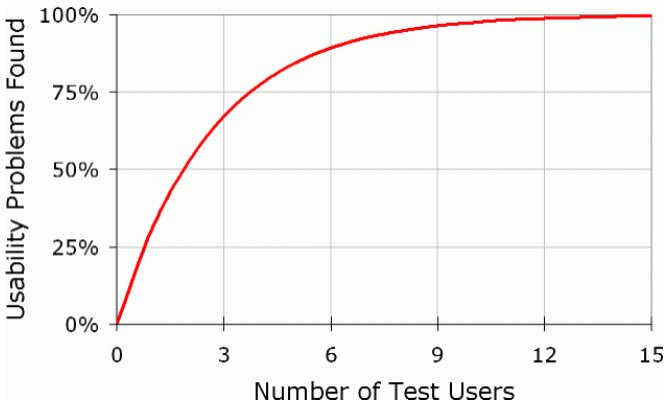

Figure 4.1: Nielsen's graph of diminishing returns curve for user testing

4.3 Results

We received 20 responses, 17 of which were full responses and 4 partial responses. This was sufficient given that Nielsen's curve of diminishing returns in Figure 4.1 shows that about 11 users is sufficient for qualitative data. The partial respondents still completed the business profile section and we will therefore include them in the analysis of that part as their insights were relevant.

4.3.1 Presentation

This part reviews the participants profiles and those of their businesses as a foundation to the main subject of study presented thereafter.

4.3.1.1 Participants profile

We were able to reach the target audience as 13 of the respondents gave their position as either founder or CEO. Two identified themselves as director or managing director. Two others had more unconventional designations such as growth hacker. One gave their position as business development, marketing, sales, finance. This goes to show that startups have a limited labor force and the few available have to be resourceful enough to juggle a number of roles. The respondents experience in the application area ranged from 0 to 11 years although almost half had less than 3 years experience and 80% had less than 5 years experience in the domain as shown in Figure 4.2. This shows that founders are usually quite young and inexperienced in the domain. A further question for future investigation could be whether this factors into the quality of compliance decisions that startups make.

On location, 12 of the startups were based in Kenya, 4 in Luxembourg, 2 in France, 1 in Brussels and Luxembourg, and 1 in Italy. On classification, 13 startups categorized

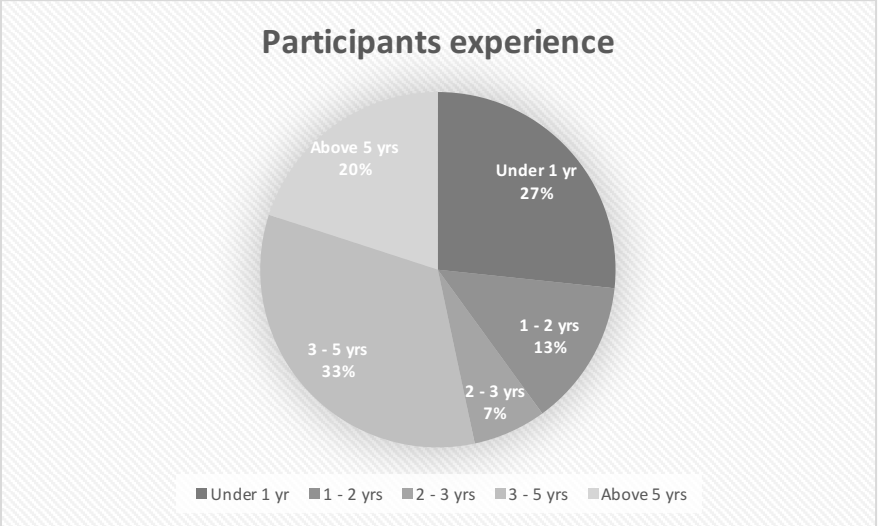

Figure 4.2: Participants experience

themselves in a technology-related field while others classified themselves according to subject matter i.e. real estate, marine, agriproduce, socialization etc. Figure 4.3 shows the participants' startups had been in operation for a period varying from 1 month to 6 years with 8 being a year old or younger. This also shows that startups are young vulnerable ventures run by youthful entrants into the domain.

14 participants had a designated legal officer while 6 did not. Of the 14 positive, 7 specifically mentioned consulting external counsel while 1 had both in-house and external counsel. Another reported having employed a legal intern but she proved too expensive to maintain.

4.3.1.2 Business profile

On the second part on the business model, participants described their business models using short formulaic descriptions that could almost fit an x per y description. For instance, either profit, margin, percentage, or commission per subscription, transaction or sales. 9 participants had identified the laws or regulations that affected their business

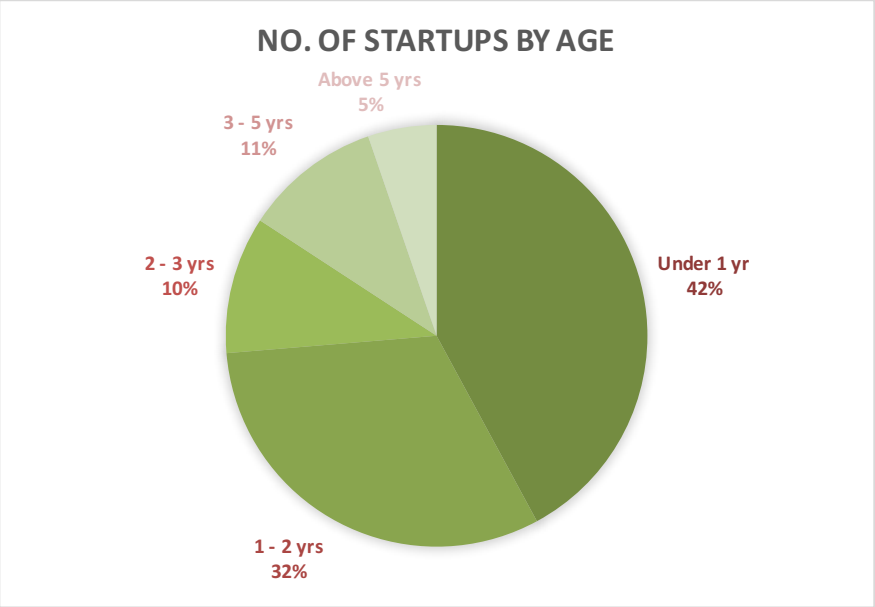

Figure 4.3: Startups by age

models while 11 hadn't. Nevertheless, 13 against 4 participants were able to factor legal risks that they had identified in the process of designing or changing their business model. From the Likert scale we selected the statements with strong responses (either positive and negative), and emphasized those with a low response variation in their responses (indicating consensus among participants). These statements are not used as statistically generalizable findings, but as verification for the analysis of the qualitative data, and to ensure they both corroborate each other.

4.3.2 Interpretation

In this section we give an outline of ITxLaw misalignment as perceived by founders, describing the dominant views held by participants for the different aspects we studied on access to the law. We will try as much as possible to let the participants speak for themselves, showing their actual responses.

Question	Polarity
1. The law is clear as regards our business model.	Negative
2. It is easy to determine which legislation is applicable.	Negative
3. We have taken a crucial decision about the business model without knowing exactly what the law is.	Positive
4. Compliance related decisions are often refined at a later stage.	Positive
5. When we make a compliance decision, it is final.	Negative
6. Time constraints do not allow us to consider all decision alternatives.	Positive
7. We prefer discussions with lawyers or (other stakeholders) to base our compliance decisions	Positive
8. It is easy to interpret what rules the legislation provides and how they affect our business model.	Negative
9. We prefer to base compliance decisions on other business related data.	Positive
10. Compliance decisions often have to be reconsidered, which also affects other decisions.	Positive

4.3.2.1 Accessibility of the law to startups

Affordability of legal services

As expected, the responses intimated that legal services are expensive for startups. More importantly, this may be explained by a misalignment where lawyers apply traditional business models such as retainers and hourly billing to startups which are not yet financially sound for such models. In fact, recognition is occasionally given to law firms that develop tailored offerings for startups showing this is not the norm.

Relatedly, responses show that there isn't enough training on legal resources for founders to understand the nature of legal advice they should be seeking. When they do seek that advice, it is hard to apply. One participant summed up the issue well when asked what made compliance challenging to them: "Finance, it is expensive as a startup to get a lawyer to advice as well as to comply with and implement the law as interpreted and recommended by the lawyer." Some incubators have tried to solve this problem by employing in-house counsel to advice their startups. However, it was noted that such lawyers may not be proactive thus: "Identifying where to start in the first place. Hence why we have lawyers to consult. But the lawyers are not forthcoming until you actually ask." It would seem that this participant expected more of their incubator's

counsel towards understanding the law's implications on their business model. Such expectations were not met possibly because such lawyers are more concerned with management concerns of streamlining other legal issues which were foremost in the failure of startups in the dot-com bubble such as incorporation, shareholding, taxation, and intellectual property. Where engagement with the lawyer was successful, other issues arose such as "Trust with the expert. Blurry responses. Need to have someone skilled enough in new business model variations to be a proposal force."

Value of legal services

If startups are not able to afford legal services, and those that do have minimal resources and training on how to apply the advice given in meaningful ways, it may be that even where lawyers offer sound legal advice, startups are not able to find much value in it. This may be seen in the fact that while many of the participants were able to identify the subject matter of legal risks their business model faced, 11 out of 20 were not able to identify the main laws and regulations affecting them. Some even stating "I have no idea on what laws bind me usually until I get sued or get served for it." This may lead them to seek alternative sources as in this response: "We read and modify the contracts ourselves. The returns cannot yet bring in a lawyer. We seek advice from other startups and companies in the same industry. Also friends and family help out".

4.3.2.2 Complexity of access

Identification of legal provisions

The complexity the participants experienced in accessing the law centered on obscurity and vagueness of legal provisions. Almost half of the respondents (9 out of 20) reported that they were able to identify the laws and regulations that affect their business model. However, when asked about the difficulties they faced in this endeavor, they suggested

that the legal frameworks were not adequate: "There are not always specifications for our exact type of business", and "lack of examples". Of the 11 participants that had not identified the laws and regulations affecting them, it was for lack of information. This is partly a function of the cost of information which leads them to rely on other sources of information for instance, "... information is under ownership of lawyers, especially in European markets, on others some interesting resources are available on Quora or Stack Exchange." The larger issue here is the lack of knowledge and training on legal resources: "Without any legal background it is hard to personally identify the laws, we therefore result to consulting." However, we have also seen that consulting is not yielding much actionable advice. This calls for more resources for customizing the law to existing business models.

Interpreting legal provisions

Another way we wanted to understand complexity is on how difficult it was for those participants that had identified some legal risks to factor them into the business model formulation process. 13 against 4 participants were able to consider legal risks when designing/changing their business model. This should tell us that there is some form of interpretation going on albeit limited. Remember this is subject matter of the legal risk generally as many were not able to identify the specific legal provisions that affected them. The main hurdle reported was that legal provisions were also difficult to understand and interpret. However, there was an outlier that identified no difficulties. On closer scrutiny, this participant dealt in banking software with a 3-year-old startup and they personally had 5 years experience. This would be expected i.e. the complexity of dealing with the law eases over time as the technology matures and the entrepreneurs gain more experience.

Applying interpretations to business models

Of the 13 participants that considered legal risks while designing or changing their business model, 9 against 4 were able to determine possible ways in which the models could have been affected for instance, "We have had to change the technology used to open source licenses" and "yes e.g. changing the software structure to accommodate licensing requirements without loosing the competitive advantage and know how". However, the alternatives were not always so practical e.g. "The business model could carry too much friction to be fully functional with the market needs." The complexity of application also arises from the intrinsic set-up of many startups to leverage technology to scale to online markets as their main market as opposed to mainstream firms which use the internet to expand their existing markets. The problem is "Operating in different countries makes it difficult to handle different regulations." Responses showed that participants struggle to implement different variations of a business model in order to be compliant in each jurisdiction. This will also have a multiplier effect on the legal spend necessary to be compliant in a cross-jurisdictional or multi-jurisdictional setting. We tested again the involvement of lawyers at this more granular level and of those that maintained a designated legal officer either internally or externally, they had some form of consultation while considering possible modifications to their business model. Nevertheless, when these particular participants were then asked whether they were able to propose appropriate modifications of the business model to solve the risks, only 6 against 6 had a positive response. Of the negative responses, uncertainty was expressed on whether the issue was solvable.

4.3.2.3 Role of technology in aggravating access

With the above information, it is important to try understand the role of technology in the ITxLaw misalignment in terms of the two limbs considered above i.e. affordability

and complexity of access. In terms of affordability, it may well be that lawyers may charge higher fees given the complexity of the technology involved. However, other SMEs also struggle to afford legal services so affordability is not necessarily unique to the startup domain. On the other hand, the complexity of identifying, interpreting and applying legal provisions relating to disruptive technology may mean that founders lack sufficient information to make adequate compliance decisions. This could mean that technology-driven business models are more likely to be non-compliant compared to traditional business models.

We already noted in subsection 2.2.1 that technology is central to the startup application domain. We also confirmed that the business model is usually unsettled and always evolving i.e. agile. In response to the question of how they (intend to) make money, participants said: "Business model appears with the market/solution fit. We're still looking for the perfect fit", "ridesharing: commission between the rider and the passenger - we gave up. Now, it's based on customer/supplier relationship on a btob market", "Still ongoing with several iterations and test. We haven't found a working attractive business model yet". The primary goal is scalability and all decisions seems to be oriented towards optimizing the business model using technology in a manner lean enough to scale to a wide market. This is essentially a startup's competitive advantage and all decisions are geared towards that. However, compliance decisions are not yet seen this way. This is because, when asked what's makes legal compliance challenging, some of the responses given were: "Interpretation of the law. Looks vague at times", "Trust with the expert. Blurry responses. Need to have someone skilled enough in new business model variations to be a proposal force", "lack of examples". This may suggest that startup engineers may view compliance as obstructive if seeking legal advice is unyielding and as we have seen, expensive.

For the participants that said they do not consider legal risks when designing or changing their business model, the reasons included "Getting customers is more impor-

tant than anything else." and "I don't care about them since my business model can adapt, we have low scale then low risk, if we are disruptive enough we may expand to other markets/having legislation adapting." This highlights the pressure that timelines impact on compliance decisions.

Finally, we sought the participants' views on what was most important to facilitate the compliance of their business models. It is telling that two participants equally said "no idea". More instructive responses included "to get the opinion of the public authorities even if it's only a trend." and "researching on what compliance means for my business and what is required to be compliant." Theirs is also a genuine interest in being compliant, for instance, "We have to be sure to be compliant with the law at the beginning of the project." and "Having all the documentation to back up your claims and defend yourself against any claims." However, there doesn't seem to be enough resources to do so.

4.4 Key findings

4.4.1 Insufficient information for managing legal risks

The foremost observation is that majority of the founders are not simply ignoring their obligations to be compliant. Responses to question 7 in Figure 4.4 shows that majority of participants attempt to seek legal advice. Moreover, that they rely on forums, friends and family for legal advice when they cannot afford lawyers ought to be a testament of their genuine desire to comply with the law. We have also seen that they struggle to apply legal advice when they are able to procure it. Unfortunately, they do not have enough time to decode this information as seen in responses to question 6 in Figure 4.4. Without the necessary skills for legal interpretation, compliance decisions are likely to become subservient to other modeling decisions as seen in responses to question 3 in

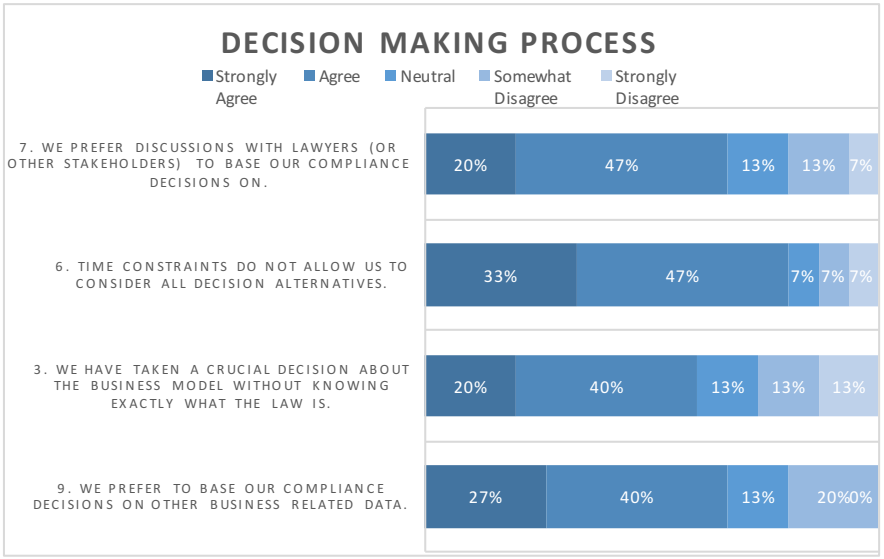

Figure 4.4: Responses to the decision-making process.

Figure 4.4. This results in a situation where compliance decisions are based on other more available albeit inferior sources of information as shown in responses to question 9 in Figure 4.4. Participants were generally not very confident of the quality of compliance decisions they were making and thereby risking noncompliance.

4.4.2 Technology compounds the complexity of legal interpretation

The data confirms the assertion made in the literature that lawyers may understand the legal requirements for compliance but lack the necessary tech-savvy to advice startups. The participants' attitude on this is summarized by question 1 and 2 of Figure 4.5. Where available, the advice given by lawyers is vague and difficult to apply as shown in majority of responses to question 8 in Figure 4.5. Some participants therefore deemed it untrustworthy. This gets more complicated in a cross-jurisdictional or multi-jurisdictional setting e.g. "Each jurisdiction in which we operate has a different legal environment. We work with external counsel in each market to ensure we have maximum expertise. Our chief legal and compliance officer manages these external

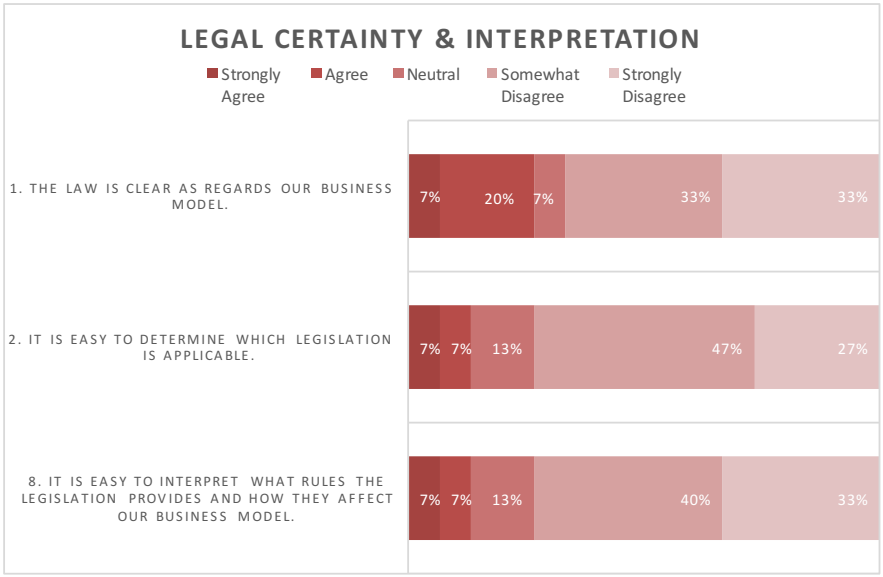

Figure 4.5: Responses regarding legal certainty and interpretation.

counsels". The most difficulty encountered was on how to implement variations of the business models in order to be compliant. This provides a basis for further research on whether business models driven by disruptive technologies are more likely to be non-compliant.

4.4.3 Uncertainty regarding compliance decisions

In line with the foregoing two findings, participants are not confident in the nature of compliance decisions that they are making. Some participants, did note that "innovation can come from legal compliance", which is particularly true from the Kenyan startups that we interviewed who are more likely to get a head start from the lack of a regulatory framework. However, this can also be counterproductive as the subsequent development of regulations may vitiate successful business models thus: "We have strict anti-money laundering policies and there is much time and expertise spent on maintaining them. The legal risks are that a country in which we operate suddenly changes their view on our business model (as we are often unregulated) or even bans

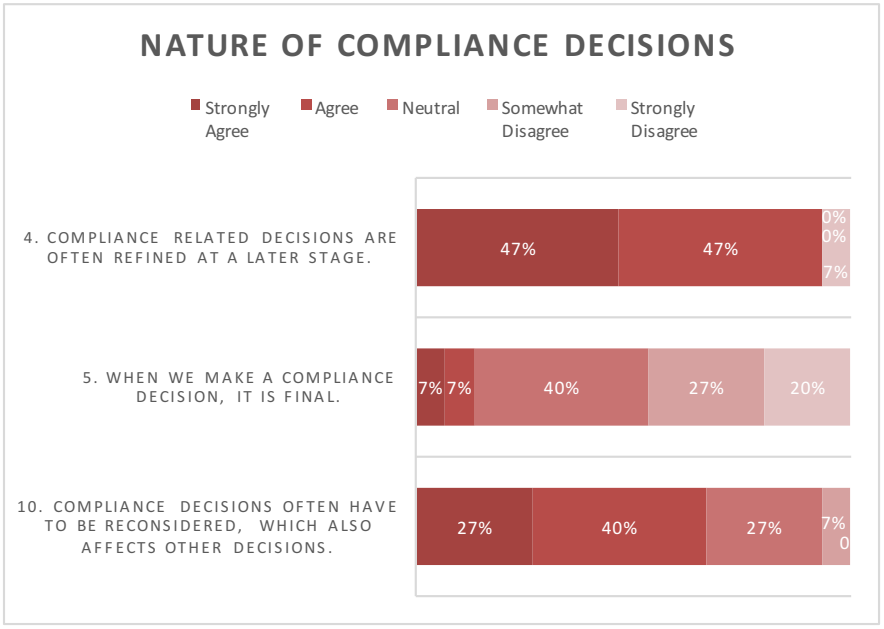

Figure 4.6: Responses related to compliance decisions.

it." They are always trying to improve these decisions using whichever resources are available to them as reflected in the responses to question 4 in Figure 4.6. It is therefore likely that such decisions may not be very productive in managing the legal risks that a startup is facing. However, given that 40% of the participants were neutral on question 5 in Figure 4.6, one could raise doubts on whether some startups are making any compliance decisions at all. When they do have to consider them, compliance decisions have a significant impact and they may require a remodeling of the business model as seen in responses to question 10 in Figure 4.6.

4.4.4 Logical next step

The foregoing survey results presentation and analysis are instructive in suggesting that:

1. Existing regulatory frameworks are insufficient for regulating emerging technologies particularly those driven by disruptive technologies. Resources are therefore

necessary to help legislators to understand and legislate sufficiently for such technologies.

2. Additional resources are necessary to help startups identify and manage the legal risks facing their business models.
3. Additional resources are necessary to help lawyers, compliance officers, regulators and related stakeholders apply existing regulations to startups in a practical manner.

4.5 Conclusion

The foregoing findings help to formulate the following requirements in relation to the conceptual framework:

1. It is imperative to develop a compliance formulation method that is tailored for, and equally agile to the rapidly evolving business models in the startup domain and one that lawyers can understand.
2. The module on legal interpretation needs to deliver a prescription that is actionable.
3. The module on legal analysis needs to identify the risk and deliver clear and specific requirements tailored to manage it.

Chapter 5

Modeling

5.1 Introduction

Our goal in this chapter is to describe the preprocessing that needs to occur in order for the compliance pattern framework to be applied. The first goal is to model a business in a manner that is sufficient to map the compliance patterns onto its business processes. The second modeling involves the translation of interpretive canons into semi-formal argument schemes, in which form they can be applied within the compliance pattern framework.

5.2 Value modeling

We have followed the VDMBee methodology to describe the business and build the business plan on its value management platform. This involves a three-tier methodology from discovery, prototyping and adoption.

The discovery stage begins with unstructured then structured discovery. Unstructured discovery involves web and other forms of research on general information about the business in question. Structured discovery clarifies the business strategy and its

ecosystem. It incorporates a number of business modeling tools from which one can select depending on the modeling needs, expertise and experience. We retain e^{3}value to describe the business network as a value network. This is because of the experience gained so far with the modeling tool coupled with its affinity to quickly visualize the possible legal relationships in the network. We also adopt the strategy map to depict how the strategy is implemented within the firm. The prototype stage involves creating a plan on the value management platform. This involves creating a plan and the different phases of the plan e.g. from As-Is to To-Be. In our case, the As-Is version of the plan will be the current business and the To-Be version will be the one reflecting an application of the compliance pattern. The next module is the value network design which first models the different modular networks involved in the overall business network, the value propositions, and the exchange of value. The next module is value stream design to model the value streams that create and deliver value. The fifth module is competency design for the competencies that perform activities in the value streams. The sixth module is value impact design and measurement which involves connecting values and sub-areas of aggregation into a complete design of value impact and how to measure that value impact. The seventh module involves how to prototype alternatives and next phase(s) in the plan.

Finally, the adopt stage involves the presentation of prototyping results, how to prepare for the best decision-making and how to use the prototyping results as a basis for initiating change. We now illustrate this value modeling with examples from Aereo and TVC.

5.2.1 Business model canvas

Figure 5.1 depicts Aereo's business model canvas. It helps us appreciate the general nature of the business i.e. the different customer segments served, the service delivered,

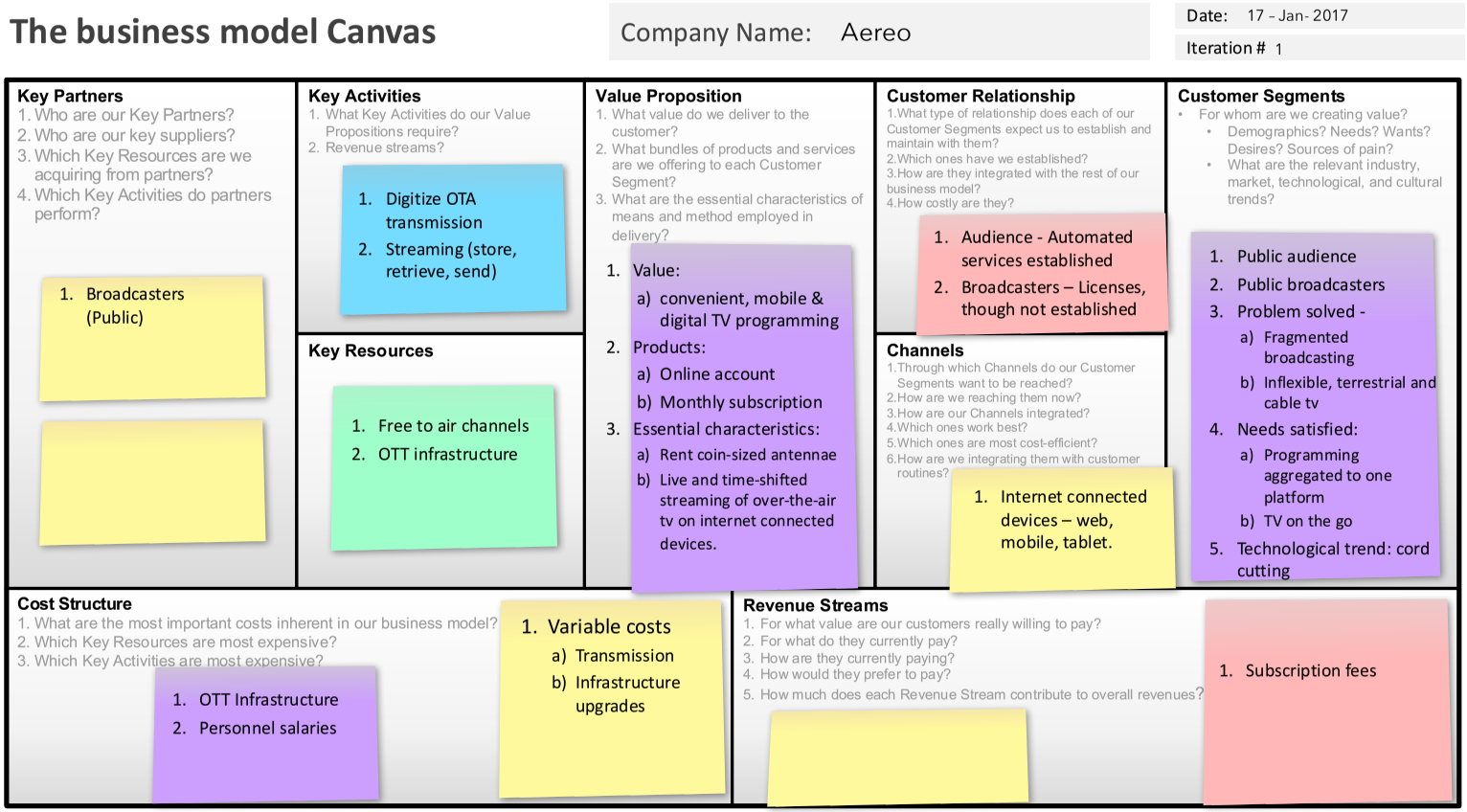

Figure 5.1: Aereo's business canvas.

the types of customer relationships and the profit model used by the business. These go towards defining our main objects of interest in the canvas i.e. the value propositions, the key activities and partners. This is where we begin to understand the competencies enabled by the disruptive technology the firm uses to generate value.

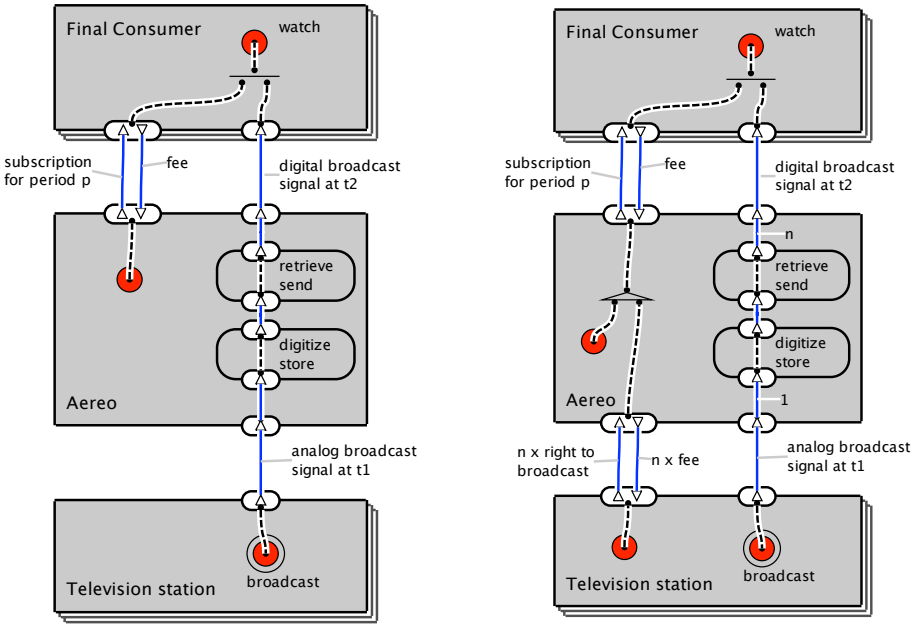

Figure 5.2: (a) Aereo's initial value model. (b). Aereo's adapted business model.

5.2.2 Value network

The value network shows Aereo in its ecosystem i.e. the interactions with key partners that enable it to create and deliver value i.e. viewers, advertisers, and the public broadcast channels. Figure 5.2 illustrates how e^3-value models the court scenario. This type of modeling was very intuitive for the author, a lawyer, who was quickly able to spot a copyright issue arising in Figure 5.2 (a). We then modeled the remedy as shown in Figure 5.2 (b).

5.2.3 Strategy map

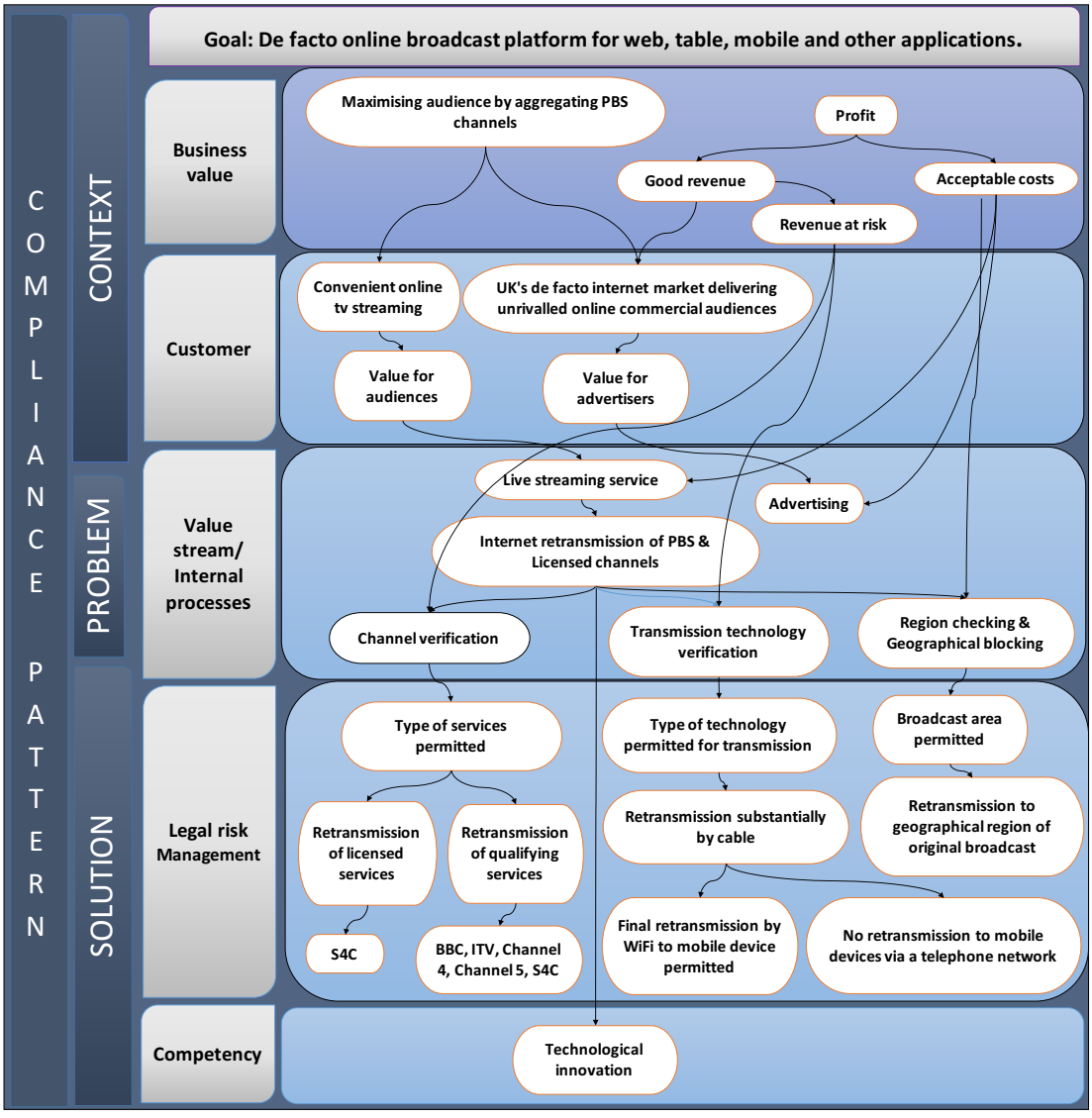

Figure 5.3: TVC's strategy map.

Figure 5.3 shows TVC's strategy map. Later on, we apply our compliance framework to develop some compliance patterns for the firm. Our current solution to manage legal risks has been to extend the strategy map with an additional 'legal risk management perspective' directly below the internal processes perspective as in Figure 5.3. We

place the patterns in the legal risk management perspective so we can map them onto their respective value streams. We then link those to the revenue-at-risk e.g. a fine or bankruptcy. This gives us a placeholder for the compliance patterns and from which we can see the corresponding actions taken at the internal processes perspective of the strategy map. We tie the legal risk to the revenue-at-risk because it could negatively affect revenue partly (a fine) or fully (bankruptcy). On the right of the Strategy Map is an alignment of the map's perspectives to their corresponding role in the compliance pattern.

5.2.4 Value model

Besides linking compliance patterns to the strategy map, we also need to quantify them in the VDMBee business plan. This helps the business executives to understand the consequences and the future viability of the business model. Given the CJEU ruling and UK's decision to terminate the section 73 exception, the total revenue is at risk and TVC will have to factor the cost of acquiring copyright in order to access both the UK and EU markets. We implemented the TVC case on VDMBee and details about the example implementation can be found at TVC business model.

5.3 Modeling canons

Chapter 3 has shown that there are many canons operating within the arguments in the Aereo and TVC cases. However, we do not have a structure for interacting with these canons. Here, we consider argument schemes from informal logic as a tool to represent the canons introduced in section 2.4. The following terms are abbreviated: VM - Value Model, CR - Constitutive Rule, PR - prescriptive rule, PC - prescriptive condition, T-term, Cs - Case, Pr - purpose, SR - substantive reason, I - Interpretation.

5.3.1 Linguistic arguments

Linguistic arguments are made from an express reading of the text of the law and they are the initial arguments to be made. For instance, in both running examples, one party argued the term 'cable' means wire (ordinary meaning) while the defendants argued for fibre-optic (technical meaning).

5.3.1.1 Argument from ordinary /technical meaning

These arguments are best represented using Walton's argument from verbal classification particularly *the argument from definition to verbal classification* [Walton et al., 2008, p. 319]. We formalize it as an *argument from ordinary/technical meaning* as follows:

1. *Definition premise*: $\mathrm{VM_x}$ fulfills the prescriptive condition PC(T) because its technological competence fits definition t;
2. *Classification premise*: For all x, if x fits definition t, then x ought to be ascribed either:
   (a) the standard ordinary meaning of an ordinary term $\mathrm{I_t}$;
   (b) the standard technical meaning of an ordinary legal/non-legal term $\mathrm{I_t}$
   (c) the standard technical meaning of a technical legal/non-legal term $\mathrm{I_t}$.
3. *Conclusion*: $\mathrm{VM_x}$ fulfills the prescriptive condition PC(T) interpreted as $\mathrm{I_t}$.
4. *Critical questions*:
   (a) What evidence is there that t is an adequate definition in light of other possible definitions that might exclude T being in It?
   (b) Is the legal classification in the classification premise based merely on stipulative or biased definition that is subject to doubt?

5.3.2 Systemic arguments

5.3.2.1 Argument from established contextual rule

The argument from contextual harmonization involves categorization with topographic and conceptual sub-classifications. For instance, in the TVC, Justice Arden argued that the provisions describing *access to cable* in the EU directive did not make a direct reference to copyright and should therefore not be interpreted as primarily dealing with defenses to copyright infringement but with access to infrastructure. To represent this argument we appropriate Walton's argument from established rule [Walton et al., 2008, p. 343] as follows.

1. *Major premise*: The definition [T] is topographically arranged and conceptually related to the definition [Y] in [the referenced Act].
2. *Established rule premise*: Interpreting [T] according to a) the topographic arrangement with related provisions of statutes or b) its conceptual structure, is the established rule for PR.
3. *Minor premise*: the referenced Act defines [Y] as/to include I_t
4. *Conclusion*: The Court/expert must consider definition [Y] while interpreting the term [T].
5. *Critical questions*:
   (a) Does T require contextual harmonization as described?
   (b) Are there other established rules that might conflict or override with this one?
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance?

5.3.2.2 Argument from precedent

This argument refers to a previous decision made by the same court or a court of higher ranking which could be binding or persuasive on subsequent cases of a similar nature. In TVC for example, in order to apply the EU Directive to UK law, the CJEU had to follow the rule that *in a harmonizing directive, a member state option may have to be*

narrowly construed, a precedent laid down in *C-435/12 ACI Adam BV and others v Stichting de Thuiskopie and another* at [22]. Walton already has an argument scheme from precedent at [Walton et al., 2008, p. 344]. Generally, the argument has to be constructed as follows:

1. *Major Premise:* Generally, courts have interpreted [T] as/to entail that I_T.
2. *Minor Premise:* VM_X has been subjected to [T]
3. *Conclusion:* In conformity with other courts, the following interpretation ought to be applied to VM_X: I_T.

In case reference needs to made to a particular case, the argument can be made as follows:

1. *Previous case premise*: Cs1 is a previously cited case where rule PR was applied.
2. *Previous ruling premise*: In Cs1, PR(T) was interpreted as I_T.
3. *New case premise*: Cs2 is a new case that has not yet been decided.
4. *Similarity premise*: Rule PR also applies to Cs2.
5. *Conclusion*: Generally, PR(T) in Cs2 ought to be given an interpretation I_T.
6. *Critical questions*:
   (a) Are there respects in which Cs1 and Cs2 are different that would tend to undermine the force of the similarity cited?
   (b) Is I_T the right interpretation to be drawn in Cs1?
   (c) Is there some other case Cs3 that is also similar to Cs1, but in which some conclusion other than I_T should be drawn?

5.3.2.3 Argument from analogy

The argument from analogy is a subset of the argument from classification. When a case has similar facts as a previous one, the interpretation of terms in the new case should align with those of its previous counterpart. For instance, it was argued in TVC that since in Football association vs QC leisure,[1] exceptions to copyright infringement were retained to their fullest extent, the same should be done in the present case.

[1]No. 3 [2012] EWCA civ 708 [2013], FSR 20 at paragraph [52])

We customize the argument as follows using Walton's argument from analogy [Walton et al., 2008, p. 315]:

1. *Similarity premise*: Generally case Cs1 is similar to Cs2.
2. *Base premise*: PR(T) is interpreted as I_T in Cs1.
3. *Conclusion*: PR(T) ought to be interpreted as I_T in Cs2.
4. *Critical questions*:
   (a) Are there differences between Cs1 and Cs2 that would tend to undermine the force of the similarity cited?
   (b) Is PR(T) interpreted as I_T in Cs1?
   (c) Is there some other case Cs3 that is also similar to Cs1, but in which PR(T) is not interpreted as I_T?

It may also be necessary to use an analogy based on classification from Walton [2010] as follows:

1. *Premise 1*: Generally case(s) [X] has features a, b, c.
2. *Premise 2*: VM_y has features a, b, c.
3. *Conclusion 1*: Legally, Case X and VM_y should be classified in the same way with respect to the above features.
4. *Premise 3*: It is by virtue of the above features that [X] is properly classified as a [Z].
5. *Conclusion 2*: Because they are substantially similar, VM_y ought to be classified as [Z].
6. *Critical questions*:
   (a) What evidence is there that [X] is definitely a [Z] as opposed to evidence indicating room for doubt whether it should be so classified?
   (b) Is the legal classification in the classification premise based merely on assumption about word usage that is subject to doubt?
   (c) Are there differences between [X] and VM_y that would tend to undermine the force of the similarity cited?
   (d) Is there some other case [U] that is also similar to [X] but in which features a, b, and c are false?

5.3.2.4 Argument from established legal concept

A *Contract* is a good example of a common legal concept. Everyone has a basic understanding of what it means. Similarly, other legal concepts ought to maintain their meanings whenever they are interpreted. Here we again use the argument from established rule [Walton et al., 2008, p. 343]. We could also use the argument from commitment but we retain the former for consistency. The customized argument is as follows:

1. *Major premise*: The term [T] has a uniform and precise statutory/historical definition in the legal system in question.
2. *Established rule premise*: Interpreting [T] with terminological consistency is the established rule for PR.
3. *Conclusion*: [T] is interpreted as/to include I_t.
4. *Critical questions*:
   (a) What is the evidence that the established rule is to interpret T with terminological consistency /historically?
   (b) Are there other established rules that might conflict with or override with this one?
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance?

This argument can be rebutted by claiming special circumstances which means applying the argument from exceptional case. We could also rebut with argument from inconsistent commitment [Walton et al., 2008, p. 337], the warrant being that Parliament does not intend an absurdity as it cannot commit to two positions contemporaneously.

5.3.2.5 Argument from legal principle

A good example here is *conforming interpretation* i.e. the principles of interpretation which the court applies to make domestic legislation conform to EU legislation and often referred to as the *marleasing principle*. The principle states that the court can abandon the principle of statutory interpretation that expressions used in legislation

bear the same meaning throughout that legislation where it is necessary to give effect to EU law. This would in effect undercut the foregoing *argument from legal-concept* above. To expresses this canon we customize Walton's argument from values: positive value [Walton et al., 2008, p. 321] as follows:

1. *Premise 1*: P is a principle of the legal system which affects the interpretation and therefore the evaluation of [T].
2. *Premise 2*: Interpreting T as I_T is necessary to ensure commitment to principle P.
3. *Conclusion*: T ought to be interpreted as I_T.
4. *Critical questions*:
   (a) What is the evidence that the established principle P applies to [T]?
   (b) Are there other principles that might conflict with or override this one?
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance?

Sometimes, principles may be conflicting and we present them with the following scheme:

1. *Premise 1*: It is principle [Px], not [Py] that is applicable to the interpretation of, and therefore the evaluation of [T].
2. *Warrant*: If [T] is interpreted using [Py], then VM_x should satisfy [the prescribed test under Py].
3. *Premise 2*: VM_x does not fulfill the prescribed test.
4. *Conclusion*: [T] ought to be interpreted using principle [Px] as I_T.

5.3.2.6 Argument from constitutive legal history

In both running cases, the argument was made that whereas the law as enacted had referred to traditional cable lines, the same text had now come to include modern fibre-optic cable and it should be interpreted according to this historically evolved meaning. Here, we use Walton's argument from constitutive rule claims - physical world premise version 2 [Walton et al., 2008, p. 342] customized as follows:

1. *Premise*: I_T counts as PR(T).

2. *Warrant*: When the meaning of a statute(s) historically evolves into something rather different from what a) its language facially represents, or b) its original design indicates, the provisions ought to be interpreted in line with the evolved meaning on a) the point and purpose of the statute or b) the new conception of rightness it embodies.
3. *Conclusion*: I_T counts as PR(T).
4. *Rebuttal factor*: The warrant backing applies unless I_T has further been revoked, overturned, or statute amended.
5. *Critical questions*:
   (a) What is the evidence that I_T counts as PR[T]?
   (b) Are there other historical interpretations that might conflict with or override with this one?
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance?

5.3.3 Teleological arguments

If the arguments proceed to the the third level, one can either deploy a) an argument from purpose or b) an argument from practical reasoning.

5.3.3.1 Argument from purpose

An example of an argument from purpose was seen in Aereo where the majority judges cited a legislative committee report to show that the current law being applied was enacted to outlaw the very activities that Aereo was being accused of conducting. We use Walton's *argument from practical reasoning: Necessary condition schema* [Walton et al., 2008, p. 323] customized as follows:

1. *Goal premise*: The legislature's purpose in promulgating (enacting/amending/repealing) PR(T) was [Pr].
2. *Alternative premise*: Therefore, it is necessary that at least one of the following interpretations of the term [T] ought to fulfill this purpose [I_1, I_2, ... I_n].

3. Selection premise: Interpretation I_i has been selected as the most compatible to fulfill Pr.
4. *Practicality premise*: No legislative intention prevents the application of I_i, as far as is known.
5. *Side effects premise*: Realizing Pr is more acceptable to the legislature than not applying I_i.
6. *Conclusion*: Therefore, I_i is the most compatible interpretation with the legislature's purpose [Pr].
7. *Critical questions*:
   (a) *Alternative means question*: Are there alternative means of realizing Pr, other than I_i?
   (b) *Acceptable/Best option question*: is I_i an acceptable interpretation, is it the best alternative?
   (c) *Possibility question*: Is there a legislative intention or other rule that prevents the application of the chosen interpretation?
   (d) *Negative side effects question*: Are there negative side effects of applying I_i that ought to be considered?
   (e) *Conflicting goals question*: Does the legislature have purposes other than Pr, which have the potential to conflict with applying Pr?

5.3.3.2 Argument from substantive reason

A substantive reason used to rule against Aereo was that congress had enacted a complex licensing regime setting out the conditions, including the payment of compulsory fees under which cable systems may retransmit broadcasts to the public. We choose Walton's abductive - backward argumentation scheme [Walton et al., 2008, p. 329] as it allows us to list, compare and choose between the foregoing arguments at the systemic level of interpretation.

1. *Substantive premise*: [SR] is a particular/general substantive reason of a moral / political / economic / social nature in the legal order informing the content of/relevant to the immediate interpretation of [T].

2. *Alternative premise*: Each of the interpretations [I_1, I_2, ..., I_n] of [T] should seek to achieve this substantive reason.
3. *Selection premise*: I_i is the interpretation that achieves SR most successfully.
4. *Conclusion*: Therefore I_i is the most plausible interpretation compatible with the substantive reason to [SR].
5. *Critical questions*:
   (a) How satisfactory is I_i itself as a substantive reason, apart from the alternative reasons available so far in the dialogue?
   (b) How much better a representation of the substantive reason is I_i than the alternative interpretations so far in the dialogue?
   (c) How thorough has the search been in the investigation of the case? Would it be better to continue the dialogue further, instead of drawing a conclusion at this point?

5.3.4 Trans-categorical arguments

5.3.4.1 Argument from intention

Here we use Walton's abductive scheme for argument from character to action [Walton et al., 2008, p. 329] customized as follows:

1. *Premise 1*: Parliament promulgated (enacted/amended/repealed) a given Act/provision in relation to [T].
2. *Premise 2*: This ought to be interpreted as fitting the intention I_x over I_y in regard to VM_x.
3. *Conclusion*: Therefore, the legislature intended I_x for VM_x when it promulgated with regards to [T].
4. Critical questions:
   (a) How was the intention defined (statute preamble / doctrine / case law)?
      i. enacted/amended/repealed an Act/statutory provision;
      ii. interpreted evidence; or

iii. stated in *travaux préparatoires*.

(b) Does the description of the interpretation in question actually fit the definition of the intention?

5.4 Conclusion

This chapter has illustrated value modeling section 5.2 and the modeling of canons section 5.3. The value modeling illustrated Aereo's business model mainly showing the structured discovery using a business model canvas, a value network, and a strategy map. The modeling of canons involved semi-formalization using Walton's argumentation schemes in readiness for applying them in the CPF in chapter 6.

Part II

The Framework

Chapter 6

The Compliance Patterns Framework

This chapter consolidates insights from the foregoing chapters to develop patterns that firms can apply to gauge their compliance. We will be working towards a semi-automated framework that: 1. takes a business model as input; 2. outputs that model's main activities through a value model; 3. facilitates a legal-knowledge engineer to find and interpret the relevant legal provisions and 4. apply the argumentation framework to reconcile the resulting prescriptions in order to 5. formulate applicable compliance patterns for the business model.

The objective is to design compliance that is focused on a firm's innovative business model. As seen in Figure 6.1, the appropriate design should incorporate business modeling, legal knowledge management and legal risk analysis tools and techniques to develop patterns of compliance that describe the business context, the potential problems and the possible solutions applicable to a business model. The framework is divided into three parts a) legal risk analysis b) legal interpretation and c) compliance patterns.

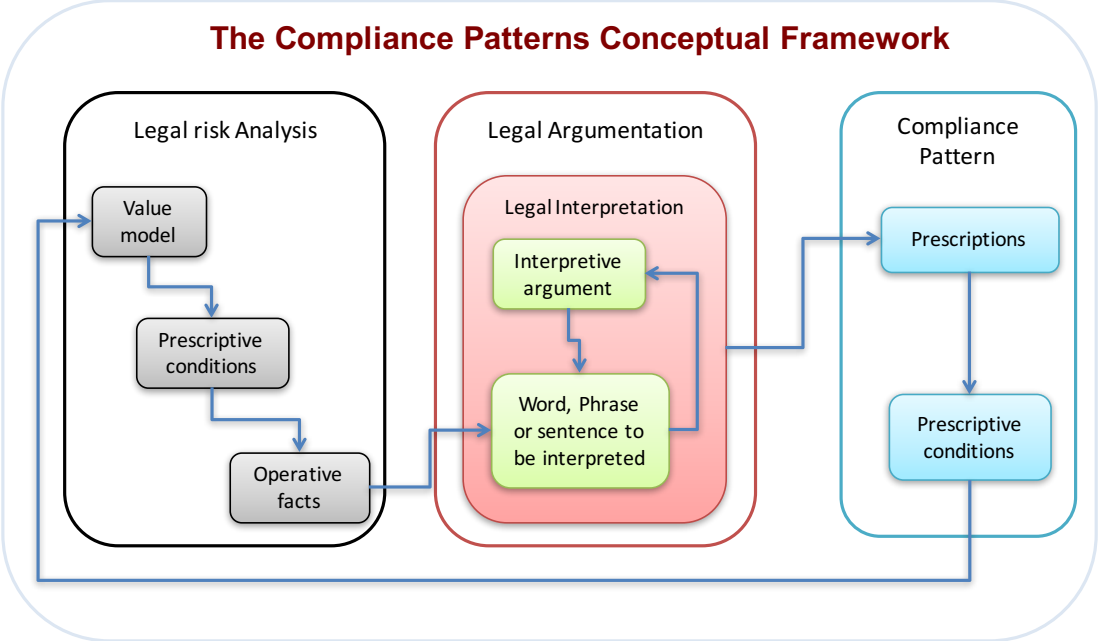

Figure 6.1: The conceptual framework.

6.1 Legal risk analysis

Value modeling: The first step is to establish what the business context is. We deploy value modeling as discussed in section 5.2 to represent the flow that a startup creates. This is shown in a value model that gives us the activities and capabilities driven by a startup's disruptive technology. It is these activities and the general interaction between the stakeholders in the value model that give hints on what legal domain governs the model. It is from this domain that the rules that determine compliance are derived.

Traditionally, once a lawyer determines the legal domain involved, they will select the relevant provisions and then narrow down to the most pertinent provision applicable to the case. Equally, Eunomos may recommend a number of rules related to one of its ontological concepts. It is the prescriptive conditions in the rule that relay the nature of compliant behavior expected of a firm. However, sometimes the operative facts in

the condition Hohfeld [1913] lend themselves to more than one interpretation. They need to be interpreted to determine the behavior required.

Legal interpretation: This part helps us explore the space of legal interpretation that is possible for a given operative fact. We apply canons from legal theory to work out the possible interpretations. This may generate conflicting or even complementary interpretations and we need a way to resolve which interpretation prevails in the former case, or which take precedence in the latter. For this we use a model from MacCormick and Summers [1991]. The prescriptive rule is then updated by rephrasing it with the interpreted version of the prescriptive condition.

Compliance pattern: This last part ties the interpreted rule to the business model in a pattern. The pattern summarizes the business context, the potential risks, the possible solutions and the relevant penalties that the startup could face. This then allows the firm, in consultation with other stakeholders, to determine possible ways of altering the value model to achieve compliance.

6.2 The compliance pattern framework

We could view the above framework as the transitions of a regulatory conversation. As such, it could take the form of a dialogue. In fact, Walton et al. [2008] discuss the use of a dialectical model to represent legal reasoning. We adopt this approach with the following steps which we structure using argument schemes as summarized in the Figure 6.2 below.

We use a dialectical approach following Walton in order to indicate how legal arguments are developed in a legal dispute. Accordingly, the argumentation is divided into five stages of a dialogue namely, domain classification, confrontation, opening, argumentation and closing stages Walton et al. [2008]. This helps to justify the winning argument, hence the winning interpretation. These stages will also serve to structure

Compliance pattern framework	Walton's argumentation scheme	Adapted scheme
	Legal risk analysis	
Positioning a value model in the legal framework	• Argument from verbal classification • Argument from analogy based on classification	Argument from legal domain classification
Rule identification	Forward argument scheme from abductive inference	Forward argument for abductive rule identification
Legal claim	Regulative-rule premise obligation claim	Argument from legal claim
Legal action	Argument from established rules	Argument from legal action
Exceptional case generation	Argument from exceptional case	Argument from exceptional case
	Legal interpretation	
Interpretive element identification	-	-
Legal interpretation generation	-	-
Legal argumentation	Forward argument scheme for abductive inference	Forward argument for abductive legal interpretation inference
	Compliance pattern	
Compliance pattern generation	Argument from practical reasoning – necessary condition schema	-

Figure 6.2: The framework argument schemes.

the rest of the framework.

6.2.1 Domain classification stage

This stage facilitates the classification of a value model within an appropriate domain in the legal framework from which the legal rules will be derived. It has two stages: value modeling then legal domain identification.

6.2.1.1 Value modeling

We apply the VDMBee value management methodology to describe the business; build a business model canvas, a business network, a strategy map and eventually the business plan on the VDMBee value management platform. This helps determine the competencies and activities driven by a startup's disruptive technology.

6.2.1.2 Legal domain identification

The resulting competencies and activities serve as evidential facts (EF) Hohfeld [1913] to determine which legal domain governs the value model. It is here that lawyers, in-house counsel or compliance officers would traditionally be engaged, although the growing number of legal knowledge engineers will increasingly be playing this role. We apply Walton's argument from classification to identify the legal domain for the value model as below:

Argument from legal domain classification

1. *Individual premise*: VM has competence/activity EF.
2. *Legal classification premise*: for all x if x has competence/activity EF, then x ought to be regulated by legal domain D.
3. *Conclusion*: VM is regulated by legal domain D.
4. *The critical questions*:
   (a) Does VM definitely have competence/activity EF, or is there room for doubt?
   (b) Can the legal domain classification be said to hold strongly, or is it subject to doubt?

6.2.2 Confrontation stage

This is where the conflict of opinion or problem is stated in a dialogue setting. We use this stage to characterize the legal research phase that lawyers conduct before a case is adjudicated. Walton applies abductive arguments for forward argument invention. We adopt this application to generate the prescriptive rules that define legal behavior and thereby help parties make their legal claim.

6.2.2.1 Prescriptive rule generation

We use Walton's forward argument scheme [Walton et al., 2008, p. 329] to derive the prescriptive rules.

Forward argument for abductive rule identification

1. *Domain Premise*: EF is an competence/activity in VM.
2. *Rule premise*: There's a set of legal rules PR_1, PR_2, ..., PR_n that regulate EF.
3. *Plausibility premise*: PR_i is the most plausible rule regulating EF.
4. *Conclusion*: Therefore EF should be compliant with PR_i.
5. *Critical questions*:
   (a) How satisfactory is PR_i itself as a rule regulating EF, apart from the alternative rules available in the dialogue?
   (b) How much better a rule is PR_i than the alternative rules so far in the dialogue?
   (c) How far has the dialogue progressed? If the dialogue is an inquiry, how thorough has the search been in the investigation of the case?

6.2.3 Opening stage

Participants try to resolve the conflict or solve the problem using rational argument. In the legal domain this may involve proponents stating their case and respondents responding, which opens the way for further argumentation. The proponents are normally expected to state the rule, generalization or in legal theory terms, a normative conditional Sartor and Pattaro [2005] for the case they allege has been violated. Here, legal claims are restated more precisely in terms of the prescriptive conditions identified from the foregoing stage.

6.2.3.1 Legal claim

We use one of Walton's argument schemes from rules [Walton et al., 2008, p. 343] as follows:

Argument from legal claim

1. *General rule premise*: [Activity a] is restricted by a right belonging to X under [section].
2. *Performance premise*: To perform the [Activity a], an entity Y must:
   (a) own the right; or
   (b) be assigned to perform
   (c) be licensed to perform
3. *Warrant*: Y violates/infringes the right of X if it performs activity without authorization.
4. *Conclusion*: Therefore, Y must own or obtain the right to perform the activity.
5. *Else*: Y violates/infringes the right of X.

6.2.3.2 Legal action

The legal action invokes additional prescriptive rules to enforce the claim. For this we deploy Walton's argument scheme from established rule [Walton et al., 2008, p. 343] as follows:

Argument from legal action

1. *Established rule premise*: Where a valid legal claim under [section] exists, X has a right to sue Y under [section].
2. *Remedies premise*: Y is potentially liable under [section] to X for: [damages, injunctions, account of profits, impounding and disposition of infringing articles, costs and attorney's fees or criminal offenses].
3. *Violation premise*: Y violates X's right under [section].
4. *Conclusion*: Therefore: Y is potentially liable to X for remedies.

6.2.3.3 Exceptional case generation

A party can now confront the other side in order to force them to negotiate a fair settlement amicably or risk being sued. This places a burden of proof on the respondent who may then respond by either rebutting the foregoing conclusion or attacking one of its premises using a suitable rule. We use Walton's argument from exceptional case [Walton et al., 2008, p. 344] to simulate how they can go about making their case.

Argument from exceptional case

1. *Exception premise*: If the case of [Ex] is an exception to the established rule under [section], the rule can be waived in that case.
2. *Minor premise*: The case cited is an exception.
3. *Conclusion*: Therefore, X is exempted from violation of Y's right under the established rule.
4. *Critical questions*:
   (a) Is the case of [Ex] a recognized type of exception?
   (b) If it is not a recognized case, can evidence that the established rule does not apply to it be given?
   (c) If it is a borderline case, can comparable cases be cited?

6.2.4 Legal interpretation

Participants may try further attempts to resolve the conflict. In law, this may involve out of court settlement, mediation, arbitration or a full-fledged legal suit. Whichever the case, the rules determined by the foregoing arguments need further examination so each party can determine the strength of its position.

MacCormick's interpretive argument	Walton's argumentation scheme
Linguistic arguments	
Argument from ordinary meaning Argument from technical meaning	Argument from classification: definition to verbal classification
Systemic Arguments	
Argument from contextual harmonization	Argument from established rule
Argument from precedent	Argument from precedent
Argument from analogy	Argument from analogy
Argument from a legal concept	Argument from established rule
Argument from general principles	Argument from values
Argument from history	Argument from constitutive-rule claims: Physical-world premise version 2
Teleological-evaluative arguments	
Argument from purpose	Argument from practical reasoning: Necessary condition schema
Argument from substantive reasons	Abductive argument scheme: Backward argumentation scheme
Trans-categorical arguments	
Arguments from intention	Abductive scheme for argument from action to character

Figure 6.3: Interpretive arguments and their corresponding argument schemes.

6.2.4.1 Legal issue identification

Stating the prescriptive conditions helps determine the terms (T) to be interpreted and the legal issues arising thereof. The prescriptive rule will have a number of elements which legal theory refers to as operative facts (OF). These are abstracted from actual legal scenarios and case law to characterize compliant behavior. An operative fact may also be defined by a constitutive rule in the interpretation section of a statute. Even then, such meaning may at times be defeasible or open textured. This is not

always unintended as the law is sometimes designed to capture multifaceted scenarios. Conventionally, a legal issue will be raised regarding the identified term. This takes the form of a question (Q), the answer to which helps determine the appropriate compliance behavior. The framing of Q sets off the interpretive process.

Once a term has been brought to issue, it will form the subject of adverse interpretation between the parties Hohfeld [1913]. The term could be a word, phrase, or sentence. Parties will use different interpretive arguments to ensure that the term fits their case. As modeled in section 5.3, we use interpretive arguments represented using Walton's argument schemes as shown in the table in Figure 6.3.

6.2.5 Argumentation stage

The identified term is interpreted in accordance with the legal question using a number of interpretive arguments.

6.2.5.1 Legal argument generation

We apply Walton's forward abductive scheme [Walton et al., 2008, p. 329] to generate the different arguments that could be made in favor of, or against a given interpretation while interpreting a given term. The argumentation model is incorporated within this argument to reconcile the resulting interpretations.

Forward argument for abductive legal interpretation inference

1. *Legal issue premise*: PR(T) is open-textured/defeasible term, that requires interpretation to determine compliance of [VM]/whether it meets the PC in the legal claim.
2. *Interpretive argument premise*:
   (a) PR(T) may be interpreted by a set of canons [$C_{\text{Linguistic}}$, C_{Systemic}, $C_{\text{Teleological-evaluative}}$, $C_{\text{Trans-categorical}}$] supplemented by plausible conditionals and other statements that

function as missing parts of enthymemes.

(b) which lead to respective interpretations [$I_{Linguistic}$, $I_{Systemic}$, $I_{Teleological\text{-}evaluative}$, $I_{Trans\text{-}categorical}$].

3. *Interpretive model premise*: Unless there is a strong indication of a $C_{Trans\text{-}categorical}$ argument, then:

   (a) the most plausible/strongest canon Ci is represented:

      i. in the first instance by a $C_{Linguistic}$ argument unless a $C_{Systemic}$ argument;

      ii. in the second instance by a $C_{Systemic}$ argument unless a $C_{Teleological\text{-}evaluative}$ argument;

      iii. in the third instance a $C_{Teleological\text{-}evaluative}$ argument;

   (b) Else:

      i. the most plausible/strongest argument is represented by a $C_{Linguistic}$ argument supported by any $C_{Trans\text{-}categorical}$ argument.

4. *Conclusion*: Then, the most plausible/strongest interpretation is:

   (a) a $I_{Linguistic}$ interpretation supported by a $I_{Trans\text{-}categorical}$ interpretation

   (b) Else:

      i. a $I_{Linguistic}$ interpretation applies in the first instance;

      ii. a $I_{Systemic}$ interpretation applies in the second instance;

      iii. a $I_{Teleological\text{-}evaluative}$ argument applies in the third instance.

6.2.6 Closing stage

Here, we determine the actual compliant behavior by applying the final interpretation to the prescriptive rule. This allows us to rewrite the rule in order to derive a prescription. The prescription should include all the accepted interpretations to reflect the possible options for compliance. We then apply the EARS framework to generate clear and unambiguous requirements for compliance.

6.2.6.1 Compliance pattern generation

We are now ready to fill out the *context - problem - solution* structure to derive a compliance pattern. The context is stated using the value model's competencies and activities, the problem is a restatement of the legal risk, and the solution is described in the system requirements clarifying the compliant behavior expected.

6.2.6.2 Legal risk management

The legal risk is managed by applying the compliance patterns to the value model. The strategy map goals represent desired changes to the current state of the business. These changes correspond to an evolution of the business that can be modeled by using two phases of the business model, one for the As-Is version (before legal risk analysis) and another for the To-Be version (compliant to the generated patterns). In order explain the necessary conditions for compliance in a way that is much more intelligible to requirements engineers, business executives, business analysts and other stakeholders, we also modify the strategy map and the value model as explained in section 5.2.

6.3 Instantiating framework with Aereo case

We now apply the foregoing framework to Aereo's case to test it.

6.3.1 Aereo's legal risk analysis

6.3.1.1 Positioning Aereo in a legal domain

1. *Business premise*: [VM_{Aereo}] has the technological competence to [digitize and stream terrestrial channels] to enable [subscribers to watch television programs over the internet about the same time as the programs are broadcast over the air].

2. *Legal classification premise*: For all x, if x has capability [digitize and stream terrestrial channels], then x ought to be governed by legal domain [Broadcast copyright].
3. *Conclusion*: The [digital broadcast copyright] domain governs [VM_{aereo}].
4. *Critical questions:*
   (a) What evidence is there that VM_{Aereo} has the capability to [digitize and stream terrestrial channels], as opposed to evidence indicating room for doubt about whether it should be so classified?
      - Evidenced by the facts in evidence in court; and
      - Evidenced by the activities in VM_{Aereo}.
   (b) Is the domain classification in the classification premise based merely on an assumption about word usage that is subject to doubt? The classification is based on:
      - The performance clause; and
      - The transmission clause of the US Copyright Act 1976.

6.3.1.2 Aereo's rule identification

1. *Domain premise*: [VM_{Aereo}] is governed by the [digital broadcast copyright] domain.
2. *Rule premise*: There is a set of digital broadcast copyright rules [PR§106(1), PR§106(2), PR§106(3), PR§106(4), PR§106(5), PR§106(6), PR§111 and PR§501] that regulate the digitization and streaming of terrestrial channels in VM_{Aereo}].
3. *Plausibility premise*: The most plausible rule regulating VM_{Aereo} is PR§106(4) - the owner of copyright in audiovisual works has the exclusive rights to perform and to authorize performance of the copyrighted work publicly.
4. *Conclusion*: Therefore, VM_{Aereo} should be compliant with PR§106(4).
5. *Critical questions*:
   (a) How satisfactory is PR§106(4) itself as a rule regulating VM_{Aereo}, apart from the alternative rules available in the dialogue? PR§106(4) comprehensively explains who owns and has the right to deal in the copyright for audio-visual works in TV programs that [VM_{Aereo}] retransmits.

(b) How much better a rule is PR§106(4) than the alternative rules so far in the dialogue?

- The other rules from PR§106 only describe copyright for other types of works.
- PR§111 defines the limits of broadcast rights but only after they have been established.
- PR§501 defines infringement and explains the remedies thereof. It comes into operation after copyright ownership has been established.

(c) How far has the dialogue progressed? If the dialogue is an inquiry, how thorough has the search been in the investigation of the case? The inquiry is still preliminary; PR§106(4) only helps us explain the scope of ownership. It is a basis for a claim.

(d) Would it be better to continue the dialogue further, instead of drawing a conclusion at this point? This argument establishes the rule to be complied with. Further steps needs to be taken to assess actual compliance of the activity/capability.

6.3.1.3 Broadcaster's legal claim

1. *General rule premise*: To perform the copyright in an audio-visual work publicly under PR§106(4), VM_{Aereo} must:
   (a) own the copyright; or
   (b) be licensed to perform.
2. *Warrant*: EF_{Aereo} infringes the copyright pursuant to CR§501(a) if it performs the copyright in an audio-visual work and:
   (a) does not own the copyright; or
   (b) is not licensed to perform.
3. *Conclusion*: Therefore, VM_{Aereo} must:
   (a) obtain ownership of the copyright (purchase, assignment, transfer); or
   (b) acquire a license to perform the copyright.
4. *Else*: VM_{Aereo} infringes the copyright pursuant to CR§501(a).
5. *Rebuttal Factor*: Aereo has an adequate excuse, or an overriding duty.

- E.g. One of the limitations of exclusive rights §107-122.

6.3.1.4 Broadcaster's legal action

1. *Established rule premise*: If [VM_{Aereo}] infringes [Broadcasters] copyright under CR§501(a), then:
   (a) [Broadcasters] has a right to sue [VM_{Aereo}] under CR§501(b);
   (b) [VM_{Aereo}] is liable to [Broadcasters] for infringement remedies including: injunctions, impounding and disposition of infringing articles, damages and profit, costs and attorney's fees [and criminal offenses].
2. *Minor premise*: VM_{Aereo} infringes on the copyright of [Broadcasters] pursuant to CR§501(a).
3. *Conclusion*: Therefore:
   (a) [Broadcasters] has a right to sue VM_{Aereo} under CR§501(b);
   (b) VM_{Aereo} is liable to [Broadcasters] for infringement remedies including: injunctions, impounding and disposition of infringing articles, damages and profit, costs and attorney's fees [and criminal offenses].

6.3.1.5 Aereo's exceptional case generation

1. *Exception premise*: If the case of [VM_{Aereo} merely supplies equipment to enable others to perform [Broadcasters] audio-visual work under CR §113(3)] is an exception, then the copyright infringement rule can be waived in that case.
2. *Minor premise*: VM_{Aereo} merely supplies equipment to enable others to perform [Broadcasters] audio-visual work under CR §111(3).
3. *Conclusion*: Therefore VM_{Aereo} is exempted from the copyright infringement rule.
4. *Critical questions*:
   (a) Is the case of [X merely supplies equipment to enable others to perform Y's audio-visual work under CR §113(3)] a recognized type of exception? Yes, under the cited provision of the law.
   (b) If it is not a recognized case, can evidence that the established rule does not apply to it be given? N/A.

(c) If it is a borderline case, can comparable cases be cited? N/A.

6.3.2 Interpretive element identification

The two main contentions from the foregoing is whether Aereo performs, and if it performs, whether it does so publicly.

6.3.3 Argument generation

Exploring the first issue will be sufficient for this running example. Using the operative term *perform*, we develop the following arguments.

6.3.3.1 Linguistics arguments

The majority opinion first argues that Aereo's system, fits the statutory definition of 'perform'. We characterize this with a linguistic argument that incorporates the technological competence and the resulting activities of VM_{Aereo}.

Argument from technical meaning

1. *Definition premise:* VM_{Aereo} performs because its technological competence fits the definition of perform i.e. - in the case of a motion picture or other audiovisual work, to show its images in any sequence or to make the sounds accompanying it audible [section 101 (definitions) The U.S. Copyright Act].
2. *Interpretation premise:* For all x, if its technological competence fits the definition in [section 101], then x ought to be ascribed the standard technical meaning of the ordinary term in that section.
3. *Conclusion:* VM_{Aereo} performs where, in the case of a motion picture or other audiovisual work, it shows its images in any sequence or makes the sounds accompanying it audible.
4. *Critical questions*:

(a) What evidence is there that [section 101(definitions)] is an adequate definition, in light of other possible alternative definitions that might exclude VM_{Aereo} being ascribed with this standard technical meaning? The definition is not adequate. The court seems to perceive it as a ambiguous and therefore goes ahead to support it with other arguments.

(b) Is the legal classification in the classification premise based merely on stipulative or biased definition that is subject to doubt? No, the definition is based on a statutory definition in the relevant Act.

6.3.3.2 Systemic arguments

To further contextualize the term *perform*, the majority opinion proceeds to associate it with a related term i.e. to *perform or display a work 'publicly'*. This takes an argument from contextual harmonization.

Argument from contextual harmonization

1. *Major premise*: The definition [To perform] is topographically arranged and conceptually related to the definition [To perform or display a work publicly] in the US Copyright Act.
2. *Rule premise*: Interpreting perform according to a) the topographic arrangement with related provisions of statutes or b) its conceptual structure, is the established rule for the prescriptive rule.
3. *Minor premise*: The Copyright Act defines *to perform or display a work publicly* to include [To transmit or otherwise communicate a performance ... of the copyrighted work...to the public, by means of any device or process, whether the members of the public capable of receiving the performance...receive it in the same place or in separate places and at the same time or at different times.
4. *Conclusion*: In interpreting the term *perform*, the Court must consider the definition *to transmit or otherwise communicate a performance of the copyrighted work to the public.*
5. Critical questions:

(a) Does the term require contextual harmonization as described? This is the approach taken in the opening statement of the majority opinion.

(b) Are there other established rules that might conflict or override with this one? The argument from principle raised by the dissenting opinion.

(c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance? No. The dissenting opinion criticizes the majority ruling stating that, with their approach, proving that one has performed necessarily proves that such performance was public.

The dissenting opinion does not have a linguistic argument to counter the statutory definition. It therefore proceeds to the systemic level to attack the broadcasters' linguistic argument. It uses an argument from principle to show that, assessed under the correct rules, it does not itself perform.

Argument from principle (liability rules)

1. *Premise 1*: VM_{Aereo} does not perform because it is secondary-culpability not direct-culpability rules which affect the interpretation, and therefore the evaluation of whether Aereo performs.
2. *Warrant:* If *perform* is interpreted using direct-culpability, then it should satisfy the *volitional conduct test to direct infringement* in order to ensure commitment to the principle that [A defendant may be held directly liable only if it has engaged in volitional conduct that violates the Act [see W. Patry, Copyright s9:5.50 (2013)]].
3. *Premise 2*: Aereo's operation of its automated system is a volitional act and a but-for cause of the resulting performances, that degree of involvement is not enough for direct liability. [Groster, 545 U.S., at 960].
4. *Conclusion:* VM_{Aereo} does not perform because it cannot be held directly liable for infringing the broadcaster's public performance right.

The foregoing argument is further supported with an argument drawn from analogy to show that, in fact, automated systems do not fulfill the volitional conduct test

when they respond to user input. The analogy is with an Internet Service Provider (ISP).

Argument from analogy (ISPs)

1. *Similarity premise*: Generally VM_{ISP} is similar to VM_{Aereo}.
2. *Base premise*: The *volitional conduct test* is false when the technological competence in VM_{ISP} facilitates automatic transfer of data between its users.
3. *Conclusion*: The volitional conduct test is false when the technological competence in VM_{Aereo} facilitates automatic transfer of broadcasts to its users.
4. *Critical questions*:
   (a) Are there differences between VM_{ISP} and VM_{Aereo} that would tend to undermine the force of the similarity cited? None have been presented by the opposing side i.e. the majority opinion in the case.
   (b) Is the *volitional conduct test* false in VM_{ISP}? Yes, The Judges support this contention by quoting the case of CoStar, 373 F. 3d, at 550-1.
   (c) Is there some other case VM_z that is also similar to VM_{ISP}, but in which direct liability is true? None have been highlighted by the case.

Even after demonstrating that the *volitional conduct test* does not apply, the dissenting opinion draws again on analogy to show why this is the case, this time with a comparison to a copy shop that issues its members with a library card.

Argument from analogy (copy shop)

1. *Similarity premise*: Generally $VM_{Copy\ shop}$ is similar to VM_{Aereo}.
2. *Base premise*: *Direct liability* of a $VM_{Copy\ shop}$ is false when a customer uses its photocopier to make an infringing copy, because it plays no role in selecting the content.
3. *Conclusion*: Direct liability of VM_{Aereo} is false when a subscriber selects a program and uses Aereo to relay it, because it plays no role in selecting the content.
4. *Critical questions*:

(a) Are there differences between $VM_{Copy\ shop}$ and VM_{Aereo} that would tend to undermine the force of the similarity cited? None have been presented by the majority opinion in the case.

(b) Is direct liability false in $VM_{Copy\ shop}$? Yes, The Judges quote the case of CoStar, 373 F. 3d, at 550-1.

(c) Is there some other case VM_z that is also similar to $VM_{Copy\ shop}$, but in which direct liability is true? Yes, the judges highlight the case of $VM_{video\text{-}on\text{-}demand}$ where direct liability is true. While Video-one-demand services automatically respond to user input like $VM_{Copy\ Shops}$, they curate i.e. they choose the content.

The dissenting opinion further strengthens its position with a precedent to prove that courts have already interpreted this issue and the precedent is binding in this instance.

Argument from precedent

1. *Major Premise*: Generally, courts have interpreted *a direct infringement claim against defendant who operates an automated, user-controlled system* to entail that [a producer who permits unlawful copying does not himself engage in unlawful copying].
2. *Minor Premise*: VM_{Aereo} has been subjected to direct infringement claim for operating an automated, user-controlled system.
3. *Conclusion*: In conformity with other courts, the following interpretation ought to be applied to VM_{Aereo}: a producer who permits unlawful copying does not himself engage in unlawful copying.

The majority opinion has its own argument from analogy to show that Aereo is similar to previous cases that SCOTUS has dealt with in the past and so should be treated in the same way i.e. as a Community Antenna Television (CATV) system.

Argument from analogy based on classification

1. *Premise 1:* The cases of Fortnightly and Teleprompter have the following features:

(a) Sell a service that allows subscribers to watch TV programs, many of which are copyrighted, virtually as they are being broadcast;

(b) Use their own equipment, housed in a centralized warehouse, outside of its users' homes;

(c) Receives programs that have been released to the public and carries them by private channels to additional viewers.

2. *Premise 2:* VM_{Aereo} has features:

(a) Sells a service that allows subscribers to watch TV programs, many of which are copyrighted, virtually as they are being broadcast;

(b) Uses its own equipment, housed in a centralized warehouse, outside of its users' homes;

(c) By means of its technology, Aereo's system 'receives programs that have been released to the public and carries them by private channels to additional viewers.'

3. *Conclusion 1:* [The cases of Fortnightly and Teleprompter] and VM_{Aereo} should be classified in the same way in respect to the above features;

4. *Premise 3:* It is by virtue of above features that [the cases of Fortnightly and Teleprompter] are properly classified as a [CATV system].

5. *Conclusion 2:* Because VM_{Aereo} activities are substantially similar to those of CATV companies that congress amended the Act to reach, VM_{Aereo} ought to be classified as a [CATV system].

6. *Critical questions:*

(a) What evidence is there that [the cases of Fortnightly and Teleprompter] are definitely a [CATV system] as opposed to evidence indicating room for doubt about whether it should be so classified? They were classified in the precedent cases highlighted by the majority opinion.

(b) Is the legal classification in the classification premise based merely on an assumption about word usage that is subject to doubt? No, it based on the similarity of the operations of both entities.

(c) Are there differences between [the cases of Fortnightly and Teleprompter] and Aereo that would tend to undermine the force of the similarity cited?

- The dissenting opinion highlights that cable systems in the cases of Fortnightly and Teleprompter transmitted constantly while in VM_{Aereo}, transmission is upon request activated by the subscriber.
- The majority decision respond by stating that given the overwhelming likeness to CATV systems targeted by the legislative reform, this difference is not critical.

(d) Is there some other case VM_Z that is also similar to [the cases of Fortnightly and Teleprompter] but in which the shared features are false? The dissenting opinion also highlight that, "at the time of SCOTUS Teleprompter decision, cable companies 'performed the same functions as 'broadcasters' by deliberately selecting and importing distant signals, originating programs, and selling commercials,' thereby making them curators of content - more akin to video-on-demand services than copy shops. So far the record reveal[ed], Aereo did none of those things."

6.3.3.3 Teleological-evaluative arguments

Both court opinions have set out strong systemic arguments in support their favored linguistic interpretations. We therefore need to ascend to the third level of interpretation to determine the strongest line of argument. Remember, this level of argumentation does not develop new arguments but decides between the ones already identified.

Argument from purpose

The majority opinion pursued an argument from purpose to illustrate why the current law being interpreted was enacted.

1. *Purpose premise:* The [US congress] purpose in amending [the Copyright Act 1976] was to [overturn the SCOTUS holdings that the activities of CATV providers fell outside the Act's scope].
2. *Alternative premise:* Therefore, it is necessary that at least one of the alternative interpretations of the term [perform] ought to fulfill this purpose:

(a) VM_{Aereo} performs where, in the case of a motion picture or other audiovisual work, it shows its images in any sequence or makes the sounds accompanying it audible (linguistic argument from technical meaning).

(b) VM_{Aereo} does not perform because it cannot be held directly liable for infringing the broadcaster's public performance right (systemic argument from principle).

3. *Selection premise:* The majority opinion selected the linguistic interpretation, as the most compatible (necessary/sufficient condition) to fulfill the purpose.
4. *Practicality premise:* No legislative intention prevents the application of the said interpretation, as far as is known.
5. *Side effects premise:* Realizing the identified purpose is more acceptable than not applying the chosen interpretation.
6. *Conclusion:* Therefore, the linguistic interpretation is the most compatible interpretation with the US congress purpose to overturn the previous SCOTUS holding that the activities of CATV providers fell outside the Act's scope.
7. *Critical questions:*

(a) *Alternative means question*: Are there alternative means of realizing the identified purpose, other than the chosen interpretation? The dissenting opinion argue that this purpose should be pursued by assessing Aereo's secondary liability for performance infringement: "Moreover, its primary and secondary liability for reproduction infringement has also not been determined. If that does not suffice and there is a loophole in the law, it is for Congress to eliminate it through appropriate legislation."

(b) *Acceptable/Best option question:* Is the chosen interpretation an acceptable or the best alternative? The dissenting opinion argue that: "the consequence of holding that someone who implements this technology 'performs' under that provision greatly disrupts settled jurisprudence which before today, applied the straightforward, bright-line test of volitional conduct directed at the copyrighted work...perhaps the Court means to adopt (invent, really) a two-tier version of the Copyright Act, one part of which applies to 'cable companies and their equivalents' while the other governs everyone else."

(c) *Possibility question:* Is there a legislative intention that prevents the application of the chosen interpretation? None has been identified in the case.

(d) *Negative side effects question:* Are there negative side effects of applying the chosen interpretation that ought to be considered? The dissenting opinion argues that the majority decision does not provide a criteria for determining when its cable-TV analogy applies. It even goes further to identify a number of scenarios that do not suffice.

i. If the rule is applied to the watch function (live television), the record function (time shifting) will not be covered.

ii. The rule cannot cover an automated service that captures and stores live television broadcasts at a user's direction as that is what remote storage digital video recorders (RS-DVRs) do, see *Cartoon Network, 536 F. 3d, at 124-5.*

iii. The rule cannot apply to any entity that operates an integrated system, substantially dependent on physical equipment that is used in common with its subscribers as this would capture ISPs and a host of other entities that quite obviously do not perform.

(e) *Conflicting purposes question*: Are there other purposes which have the potential to conflict with the one chosen? Aereo argued that the purpose of the Copyright Act is, not to stifle, but to promote innovation in the industry.

Abductive argument from substantive reason

The majority opinion continues to argue that there is a substantive economic reason why their interpretation should be preferred.

1. *Premise 1*: [Creation of a complex licensing scheme under section 111] is a particular substantive reason of an economic nature in the legal order relevant to the immediate interpretation of the term [perform].
2. *Premise 2*: Each of the interpretations of the term perform should seek to achieve this substantive reason.

(a) VM_{Aereo} performs where, in the case of a motion picture or other audiovisual work, it shows its images in any sequence or makes the sounds accompanying it audible (linguistic argument from technical meaning).

(b) VM_{Aereo} does not perform because it cannot be held directly liable for infringing the broadcaster's public performance right (systemic argument from principle).

3. *Premise 3*: The linguistic argument from technical meaning is the interpretation that achieves the substantive reason most successfully.

4. *Conclusion*: Therefore, this linguistic interpretation is the most plausible interpretation compatible with the substantive reason to create a complex licensing regime scheme under section 111.

5. *Critical questions*:

(a) How satisfactory is the linguistic interpretation itself as a substantive reason, apart from the alternative reasons available so far in the dialogue? The majority opinion uses the licensing scheme to underpin the values of the legal system in support of the amendments made in the argument from purpose.

(b) How much better a representation of the substantive reason is the chosen interpretation than the alternative interpretations so far in the dialogue? The alternative interpretation denies performance hence does not promote the substantive reason in question.

(c) How thorough has the search been in the investigation of the case? Would it be better to continue the analysis to the trans-categorical level, instead of drawing a conclusion at this point? The search has been quite advanced but the majority decision goes further to make a trans-categorical argument from intention.

6.3.3.4 Trans-categorical arguments

According to the dissenting opinion, the majority decision goes to the extent of making a trans-categorical argument because they perceive the statutory definition in the linguistic argument to be ambiguous. They therefore need strong indication of legislative intention at this level to support their position.

Argument from intention

We already underscored that an argument from intention can be used to depart from the foregoing hierarchical order of linguistic - systemic - teleological arguments. This in fact, is what the majority opinion seems to do as we can construct with the following argument. Remember the argument from intention can use any other argument in the hierarchy to make its case. This will be evident as follows:

1. *Premise 1:* Congress amended the Copyright Act 1976 to:
   (a) Overturn two previous SCOTUS holdings and clarify the term 'perform' as, to show images in any sequence or make sounds accompanying it audible.
   (b) Enact a 'transmit' clause which specifies that an entity 'performs' when it transmits a 'performance' to the public; and
   (c) Create a complex licensing scheme that sets out conditions, including the payment of compulsory fees under which cable systems may transmit broadcasts to the public (section 111);
2. *Premise 2:* This ought to be interpreted as fitting the intention that VM_{Aereo} performs, as opposed to VM_{Aereo} merely supplies equipment that allows others to perform.
3. *Conclusion*: Therefore, Congress intended that VM_{Aereo} performs when it amended the Copyright Act 1976 to:
   (a) Overturn two previous SCOTUS holdings and clarify the term 'perform' as, to show images in any sequence or make sounds accompanying it audible.
   (b) Enact a 'transmit' clause which specifies that an entity 'performs' when it transmits a 'performance' to the public; and
   (c) Create a complex licensing scheme that sets out conditions, including the payment of compulsory fees under which cable systems may transmit broadcasts to the public (section 111);
4. *Critical questions*:
   - How is the intention defined? The majority opinion rely on a parliamentary report used to illustrate the legislative history.
   - Does the description of the promulgation in question actually fit the definition of

the interpretation? The dissenting opinion questions the interpretive methodology used given that the parliamentary report is not authoritative. It is a single report issued by a committee whose members make up a small fraction of one of the two houses of Congress [See Lawson v. FMR LLC, 571 U.S. (2014)].

6.3.4 Aereo's legal argumentation

We now have to resolve all the arguments made using the argumentation model identified in subsection 2.4.6. First we detail the arguments for each side according to their hierarchical order after which we will apply the interpretive model.

1. *Legal issue premise*: 'Perform' is an open textured/defeasible term that requires interpretation to determine compliance of VM_{Aereo}.
2. *Interpretive argument premise*: 'Perform' may be interpreted by a set of canons supplemented by plausible conditionals and other statements that function as missing parts of enthymemes:
   (a) **Broadcasters:** VM_{Aereo} performs where, in the case of a motion picture or other audiovisual work, it shows its images in any sequence or makes the sounds accompanying it audible (linguistic argument from technical meaning).
      i. Because VM_{Aereo} activities are substantially similar to those of CATV companies that congress amended the Act to reach, VM_{Aereo} ought to be classified as a CATV system (argument from analogy).
      ii. This meaning of perform is the most compatible interpretation with the US congress purpose to overturn the previous SCOTUS holding that the activities of community antenna television providers fell outside the Act's scope (argument from purpose).
      iii. This is the most plausible interpretation compatible with the substantive reason for [creation of a complex licensing regime scheme under section 111.] (argument from substantive economic reason).
      iv. Congress intended that VM_{Aereo} performs when it amended the Copyright Act 1976 to:

A. Overturn two previous SCOTUS holdings and clarify the term 'perform' as, to show images in any sequence or make sounds accompanying it audible.

B. Enact a 'transmit' clause which specifies that an entity 'performs' when it transmits a 'performance' to the public; and

C. Create a complex licensing scheme that sets out conditions, including the payment of compulsory fees under which cable systems may transmit broadcasts to the public (section 111).

(b) **Aereo:** VM_{Aereo} does not perform because it cannot be held directly liable for infringing the broadcaster's public performance right (systemic argument from principle).

i. The volitional conduct test is false when the technological competence in VM_{Aereo} facilitates automatic transfer of broadcasts to its users (argument from analogy (ISP))

ii. Direct liability of VM_{Aereo} is false when a subscriber selects a program and uses Aereo to relay it, because it plays no role in selecting the content (argument from analogy (copy shop)).

iii. The following interpretation ought to be applied to VM_{Aereo}: a producer who permits unlawful copying does not himself engage in unlawful copying (argument from precedent).

3. *Interpretive model premise*: Unless there is a strong indication of a $C_{Trans\text{-}categorical}$ argument, then:

(a) the most plausible/strongest canon Ci is represented:

i. in the first instance by a $C_{Linguistic}$ argument unless a $C_{Systemic}$ argument applies;

ii. in the second instance by a $C_{Systemic}$ argument unless a $C_{Teleological\text{-}evaluative}$ argument applies;

iii. in the third instance a $C_{Teleological\text{-}evaluative}$ argument;

(b) Else:

i. the most plausible/strongest argument is represented by a $C_{Linguistic}$ argument supported by any $C_{Trans\text{-}categorical}$ argument.

4. *Conclusion*: Therefore, the strongest interpretation is a trans-categorical argument constituting a linguistic argument supported by an argument from intention:
   (a) VM_{Aereo} performs where, in the case of a motion picture or other audiovisual work, it shows its images in any sequence or makes the sounds accompanying it audible (linguistic argument from technical meaning).
      i. This meaning of perform is the most compatible interpretation with the US congress purpose to overturn the previous SCOTUS holding that the activities of community antenna television providers fell outside the Act's scope (argument from purpose).
      ii. Congress intended that VM_{Aereo} performs when it amended the Copyright Act 1976 to:
         A. Overturn two previous SCOTUS holdings and clarify the term 'perform' as, to show images in any sequence or make sounds accompanying it audible (argument from intention);
         B. Enact a 'transmit' clause which specifies that an entity 'performs' when it transmits a 'performance' to the public (argument from contextual harmonization); and
         C. Create a complex licensing scheme that sets out conditions, including the payment of compulsory fees under which cable systems may transmit broadcasts to the public (argument from substantive reason).
      iii. Because VM_{Aereo} activities are substantially similar to those of CATV companies that congress amended the Act to reach, VM_{Aereo} ought to be classified as a CATV system (argument from analogy).
5. *Critical questions*:
   (a) How satisfactory is $C_{Trans\text{-}categorical}$ itself in interpreting T, apart from the alternative arguments available so far in the dialogue? It is the winning argument as endorsed by the majority opinion at the SCOTUS.
   (b) How much better an interpretive argument is $C_{Trans\text{-}categorical}$ than the alternative arguments so far in the dialogue?

- It is able to explain the term; and
- trace the legislative history motivating this interpretation.

(c) How far has the dialogue progressed? If the dialogue is an inquiry, how thorough has the search been in the investigation of the case? This the first part of the dialogue which determines whether the respondent performs. The next step is to determine if such performance was public. The investigation is exhaustive for the first part.

(d) Would it be better to continue the dialogue further, instead of drawing a conclusion at this point? The dialogue needs to proceed in order to determine whether Aereo's performance is public or not.

6.3.5 Compliance pattern generation

The conclusion in the legal argumentation designates the winning argument. It is there that we extract the possible valid interpretations as follows: The technological competence in [VM_{Aereo}] to digitize and stream terrestrial channels, performs when:

1. It shows the images of a motion picture or other audiovisual work in any sequence or makes the sounds accompanying it audible.
2. It transmits or otherwise communicates a performance of the copyrighted work to the public, by means of any device or process, whether the members of the public capable of receiving the performance receive it in the same place or in separate places and at the same time or at different times.
3. Its activities are substantially similar to CATV systems:
   - Sells a service that allows subscribers to watch TV programs, many of which are copyrighted, virtually as they are being broadcast;
   - Uses its own equipment, housed in a centralized warehouse, outside of its users' homes;
   - By means of its technology, Aereo's system receives programs that have been released to the public and carries them by private channels to additional viewers.

6.3.5.1 EARS Schema

This interpretations capture the competencies and activities of VM_{Aereo} as it can no longer claim it merely facilitates the subscriber to perform. Recalling the legal claim, this value model must either own copyright, or be licensed to undertake such performance. We therefore apply the EARS schema discussed in subsection 2.4.7 to generalize the interpretations as follows:

Ubiquitous requirements

For Aereo, there's only one single requirement: The system shall verify that the channels being re-transmitted to subscribers over the internet are licensed channels. For comparison, we derived a similar requirement for TVC in the EU scenario Muthuri et al. [2017]. However for the UK scenario, the following requirements apply:

1. The system shall verify that the channels being re-transmitted to subscribers over the internet are either:
   - Public broadcast channels - BBC, ITV, Channel 4, Channel 5, or S4C; or
   - Licensed channels.
2. The system shall prevent retransmission to mobile devices via any mobile telephone network.

State-driven requirements

WHILE transmitting channels, the system shall restrict retransmission to the geographical region of the original broadcast.

6.3.5.2 Aereo's compliance pattern

Using, the *context-problem-solution* structure and the foregoing analysis, we derive a compliance pattern as follows:

- **Context:** Aereo technological resource has the capability to digitize and stream terrestrial channels to subscribers over the internet.
- **Problem:** The retransmission capability may infringe broadcasters right to broadcast and film copyright.
- **Solution:** *Ubiquitous requirement*: The system shall verify that the channels being re-transmitted to subscribers over the internet are licensed channels.

6.3.6 Aereo's legal risk management

We apply the developed pattern to Aereo by adding an activity to the legal risk management perspective of the strategy map for channel verification as shown in Figure 6.4. This helps to map the ubiquitous requirement in the legal risk management perspective to the business processes in the value stream perspective. Additionally, the activity is added to the compliant phase of the value model which mitigates the negative valuation of the *legal risk value* in the model and hence the *value-at-risk* at the business plan level.

6.4 Conclusion

In this chapter, we have represented the legal risk analysis process by semi-formalizing the individual steps using argumentation schemes in steps comparable to Walton's dialectical model. To facilitate this process, we have co-opted value modeling into the framework in place of the facts that would ordinarily be rendered in a court case. This facilitates the legal risk analysis and which involves interpretation and reconciliation

of any legal issues using argumentation. The final prescriptions are used to derive unambiguous system requirements that can then be applied to formulate a compliance pattern using earlier defined context and problem statements. An illustration of the framework using Aereo as a running example has been conducted to show that the method works and is applicable to the target audience. However, we still need to evaluate the framework in the real world which follows in the subsequent chapter.

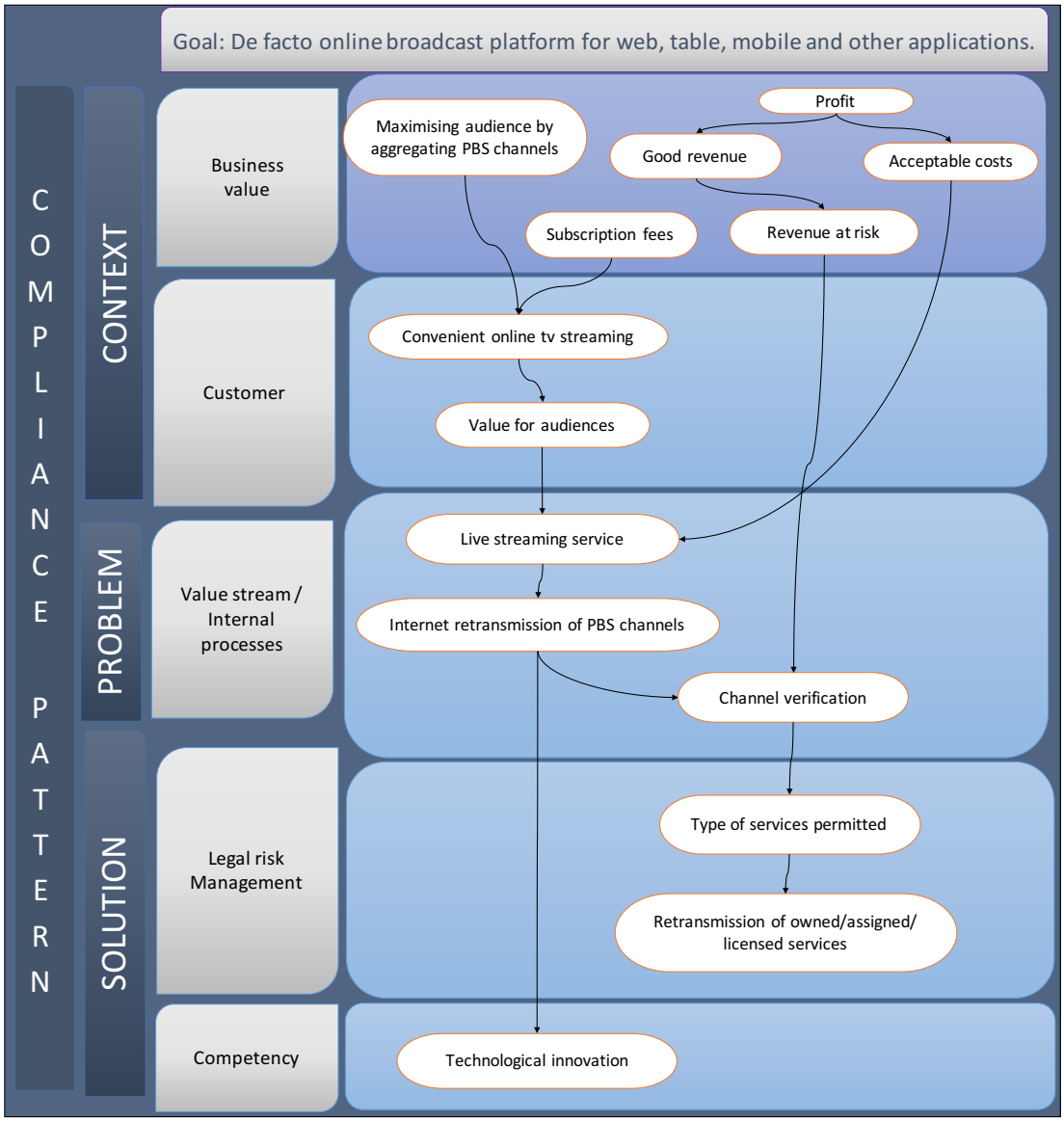

Figure 6.4: Aereo's strategy map with risk management

Chapter 7

Case Studies

7.1 Introduction

We conduct two case studies to test the compliance pattern framework developed in chapter 6 above. The studies are of startups BitPesa and FirstLife headquartered in Nairobi and Turin respectively. Data for the case study was collected by means of interviews and a documentary review of publicly available documents. We also use original legal sources so the reasoning can be traced.

7.1.1 Case study protocol

We synthesize the VDMBee methodology with our own compliance pattern framework to create the following method for conducting the two case studies as summarized in Figure 7.1. This is encased within the *context* - *problem* - *solution* pattern structure for an integral view of the numerous interdisciplinary aspects incorporated thus far.

The context: The context is made up of two stages. The domain classification stage develops a value model of the startup from which the relevant legal domain is identified. The confrontation stage is next, it helps to determine the dispute at hand.

	CONTEXT	
Domain classification stage	Value modelling	VDMBee: Discovery: • Unstructured discovery • Structured discovery VDMBee: Prototype
	Legal domain identification	Argument from legal domain classification.
Confrontation stage	Prescriptive rule specification?	Forward argument for abductive rule identification.
	Legal claim	Argument from legal claim
	Legal action	Argument from legal action
	Exceptional case	Argument from exceptional case
	PROBLEM	
Opening stage	Legal issue identification	Operative facts • Term to be interpreted Legal question
Interpretation stage	Legal argument generation	Forward argument for abductive inference
Argumentation stage	Legal argumentation	
	SOLUTION	
Closing stage	Prescription generation	Interpretation + prescriptive rule • Prescription
	Requirements specification	Requirement type(s)
	Compliance pattern generation	
	Legal risk management	Legal risk management perspective of the SM
Adoption stage	VDMBee: adopt	

Figure 7.1: The case study protocol.

The problem: This phase has three stages. The opening stage which determines the issue to be interpreted. The interpretation stage generates the possible interpretations to the issue and the argumentation stage determines the prevailing interpretation.

The solution: This phase consists of the closing and adoption stages. The closing stage involves the generation of a prescription from the prevailing interpretation which helps to specify an appropriate requirement(s) for the system. This allows us to generate a compliance pattern which is applied to manage the legal risk in the value model. Finally, the adoption stage involves the necessary steps to ensure the solution is implemented within the firm.

7.2 BitPesa

BitPesa is a universal payment and trading platform for Africa headquartered in Nairobi, with offices and staff in Lagos, London and San Francisco. It provides an online platform to convert digital currency such as bitcoin into local African currencies. Founded in 2013 by Elizabeth Rossiello and Duncan Goldie-Scot, the goal of BitPesa is to allow individuals and businesses to send payments to and from Kenya, Nigeria, Uganda, and Tanzania.

7.2.1 The BitPesa context

The unstructured discovery for BitPesa is conducted via online research from its own website and other articles written about its revolutionary product. This gives us enough information to begin the structured discovery using a business model canvas, a value network and a strategy map.

7.2.1.1 Value modeling

The business model canvas

The business model canvas in Figure 7.2 helps to summarize the main aspects of the business. The goal is to deliver cheaper international money transfers to African countries using digital currency as opposed to Society for Worldwide Interbank Telecommunication (SWIFT) or other traditional money transfer systems. This delivers a number of customer segments: a) family and friends remitting money from abroad, b) businesses receiving payment from foreigners (expatriates and tourists) c) individuals and SMEs receiving business loans from donors and recently, d) businesses purchasing goods and services from China. The money is delivered via BitPesa's web platform which operates a forex exchange service in the background.

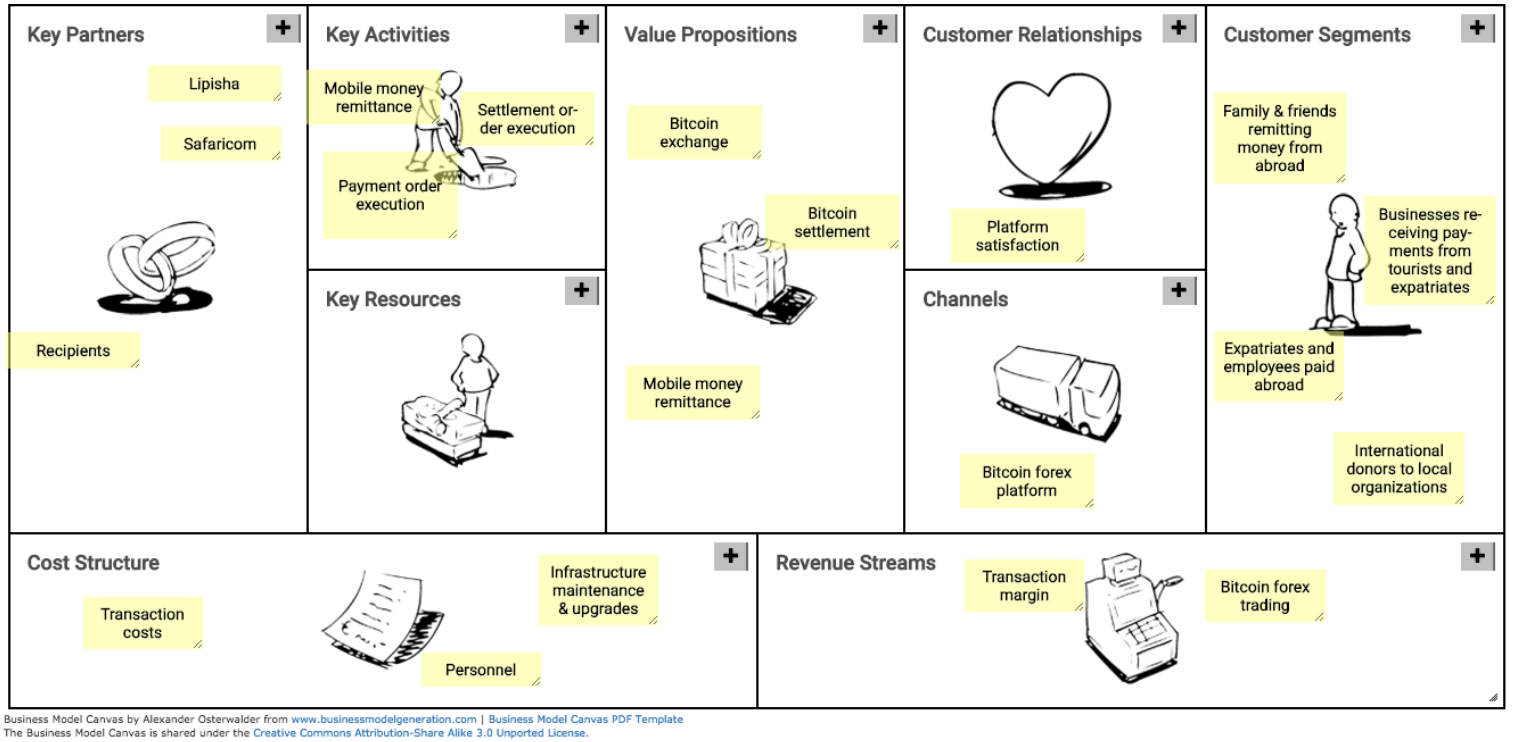

Figure 7.2: BitPesa's business model canvas.

The entire service is automated and one has to register an account on www.bitpesa.co, give an id, name, and address. When these are verified, you are allowed onto the platform. We're able to identify the following value propositions: bitcoin exchange, bitcoin settlement, and mobile money remittance. The key activities are: payment order execution, bitcoin settlement, and mobile money remittance. The key resources are: a blockchain-driven forex platform, and AML and KYC policies. Key partners are: Lipisha, a startup operating a payment gateway and Safaricom, a telecommunications company that also operates M-PESA, the award winning mobile money platform that delivers mobile money services to 10 million Kenyans.

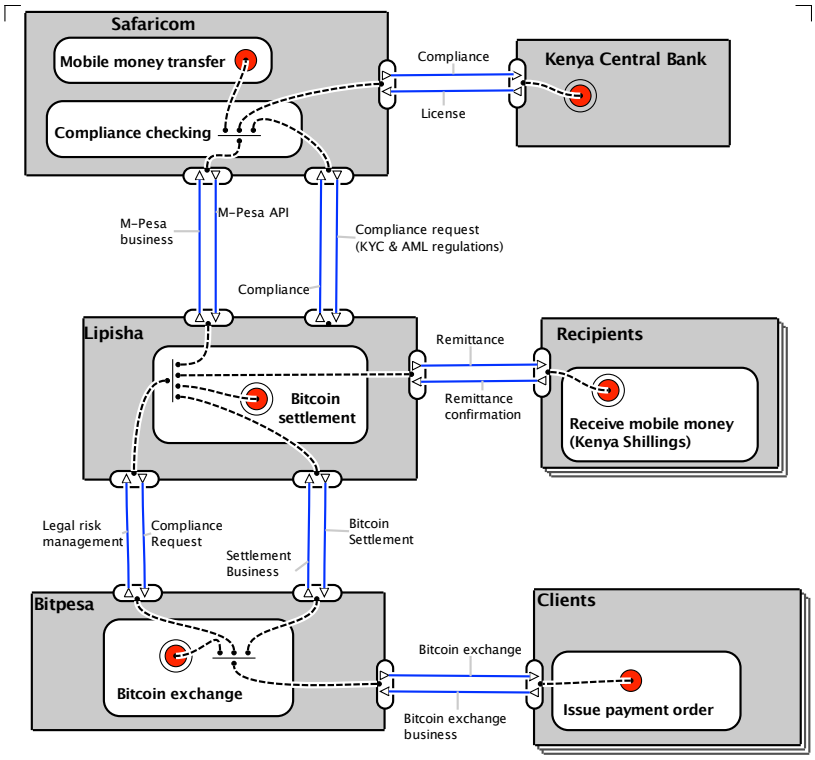

Figure 7.3: BitPesa's value network.

The value network

The value network captured in Figure 7.3 depicts the flow of value between BitPesa and its partners to create value. It shows three participant networks at work for: forex, settlement and remittance. Clients wishing to trade or remit foreign currency place an order on the site and BitPesa exchanges this for local currency via the forex platform. For the Kenyan case, this involves the settlement procedure via Lipisha.

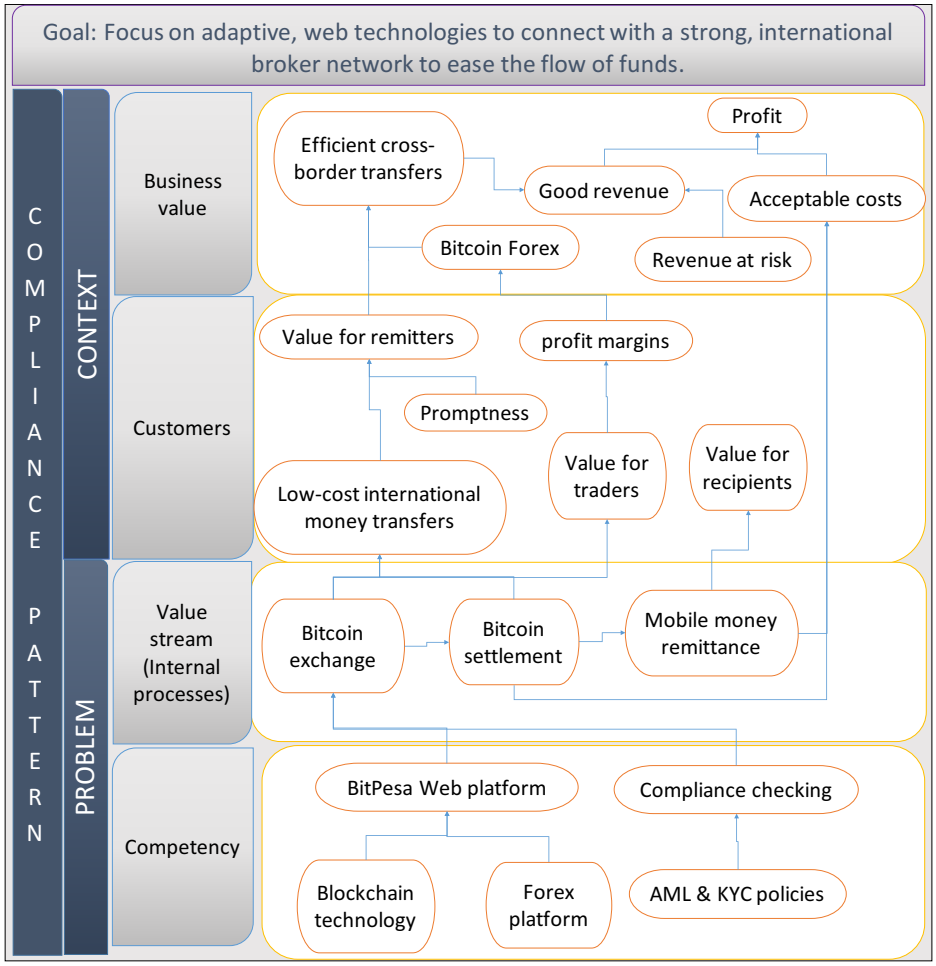

Figure 7.4: BitPesa strategy map

The strategy map

The strategy map in Figure 7.4 traces how BitPesa's high level goals are implemented in the firm's business processes. Its goal is to focus on adaptive, web technologies to connect with a strong, international network to ease the flow of funds. For the business, this involves the development of robust platforms for forex trading and cross-border money transfers to deliver good profit for the business. Remitters are also able to enjoy low-cost transfers while recipients enjoy prompt and convenient access to their money. Forex traders can also avail the Bitcoin platform. The internal processes driving these values include bitcoin exchange, settlement and mobile money remittance. The exchange is conducted on BitPesa's web platform which leverages blockchain technology and the forex trading platform. The settlement involves compliance checking using AML & KYC policies.

7.2.2 The confrontation stage

The confrontation between BitPesa and its partner Safaricom was the subject of a court case *Lipisha Consortium ltd & BitPesa ltd vs. Safaricom ltd Petition 512 of 2015*. On 12 November 2015, Safaricom suspended its services to Lipisha and by extension its counter-services to third parties including BitPesa. Safaricom required Lipisha to provide regulatory approval or a license from The Central Bank of Kenya (CBK) allowing it to transact or make bitcoin settlements. Safaricom reinstated Lipisha on 17th November 2015 on condition that it delinked BitPesa from its services. Lipisha and BitPesa sued Safaricom for conservatory orders to reinstate BitPesa pending the full hearing.

In the ruling delivered on 14th December 2015, Safaricom's main claim was that BitPesa was dealing in Bitcoin without a license from CBK contrary to the Money

Remittances Regulations and Section 12 of the National Payment Systems Act.[1] It asked BitPesa to obtain formal approval of its business from CBK pursuant to Section 13 of the National Payment Systems Act and the Money Remittances Regulations 2013. As BitPesa was conducting bitcoin business through Safaricom's systems, Safaricom contended that it had the right to protect its own business by terminating such illegality.

On its side, BitPesa reported that it has implemented AML and KYC policies that comply with Kenyan legal and regulatory requirements. They claimed to have freely submitted them to CBK, as well as regulators in other jurisdictions in which they operate stating that they hold themselves to the highest standards when it comes to AML and KYC compliance.

The court noted that BitPesa had approached Safaricom to access its payment gateway directly but it requested BitPesa to get CBK approval first given that it had revealed it dealt in bitcoin. However, CBK responded that as long as BitPesa dealt in bitcoin, it could not use the words 'money remittance' or 'money transfer'. It also stated that it does not regulate virtual currencies. Lipisha and BitPesa agreed with this view but Safaricom did not.

The court noted that the controversy as to whether approval and regulation by CBK is necessary in the circumstances of BitPesa is certainly a substantive point which requires a deeper interrogative approach at the petition hearing. Nevertheless, it gave a preliminary view with which we could start the legal analysis.

The court observed that because BitPesa was engaged in the business of accepting bitcoin from various countries of the world and exchanging it for African currencies including the Kenya shilling, then it engaged in the money remittance business. It referenced regulation 2 of the Money Remittance Regulations 2013 which define money

[1] No. 39 of 2011

remittance business to mean *a service for the transmission of money or any representation of monetary value without any payment accounts being created in the name of the payer or payee.* In that regard, bitcoin represents monetary value and it is the only reason why it can be exchanged by BitPesa for the Kenya shilling. The court therefore claimed, that BitPesa and and Lipisha were not in particularly good stead when they stated that dealing in bitcoin is not part of money remittance business. Safaricom was therefore justified in crying foul that BitPesa had not obtained any approval from CBK which put its own license at risk.

Lipisha and BitPesa lost the hearing for conservatory orders and the petition did not proceed to full hearing. However, it is a good example of how a party, in this case Safaricom, can manage a regulatory conversation. Safaricom did not wait to be approached by its regulator CBK to be deemed non-compliant, but it took active steps to manage a pending legal risk. Given the court's preliminary observation that BitPesa is engaged in money remittance business, we have to assess its compliance under the relevant legislation. We will try to manage BitPesa's regulatory conversation in the manner that it would have been argued had the matter proceeded to full hearing.

7.2.2.1 Legal domain identification

Following the foregoing suit, CBK issued the public notice in Appendix A.2 emphasizing repeatedly that bitcoin and similar virtual currencies are not legal tender and they are not regulated in Kenya. This appears to conflict with the preliminary court finding above that BitPesa is engaged in money remittance business, an activity regulated by CBK. In June 2016, the bank's Governor Patrick Njoroge remarked that Kenya and its officials were not prepared to work with virtual currencies like Bitcoin because Kenya doesn't quite have the technical means to handle cryptocurrencies. He said CBK was yet to come up with regulatory policies and discussions of blockchain technology was a point of contention for the bank. This sentiment may have since evolved given the

recent announcement of a trial to issue bonds using blockchain courtesy of the World Bank.

It is imperative to note that the public notice statement was carefully worded. It stopped short of saying BitPesa's activities are illegal. It emphasizes that virtual currencies are unregulated in Kenya. However, the court indicated that BitPesa is governed by the Money Remittance Domain whose regulator is CBK. This results in a legislative gap as the CBK is mandated to protect BitPesa's clients in its jurisdiction. The legal risk here is that CBK could be prevailed upon to enforce the relevant penalties on BitPesa for operating foreign exchange dealings without a license. This entails a fine not exceeding five hundred thousand Kenya shillings, or imprisonment for a term not exceeding three years, or both.

We do not have to apply the *argument for legal domain classification* as we can already conclude from the foregoing that BitPesa's competence, its blockchain-driven forex platform for international money transfers is governed by the foreign exchange domain under the CBK Act and more specifically, the Money Remittance Regulations 2013 promulgated under that Act.

7.2.2.2 Prescriptive rule identification

We trace the prescriptive rule from within the CBK Act and the Money Remittance Regulations 2013 with the following argument for rule identification:

1. *Domain Premise*: $\text{VM}_{\text{BitPesa}}$ blockchain-driven forex platform for international money transfers is governed by the money remittance domain.
2. *Rule premise*: There's a set of rules that regulate international money transfers:
    - Central Bank Act of Kenya, Cap 491
        - **Section 33A. Authorized dealers**
            (a) Subject to subsection (3), no person shall, in Kenya, transact foreign exchange business except an authorized dealer.

(b) A person who contravenes the provisions of subsection (1) commits an offense and shall, on conviction be liable to a fine not exceeding five hundred thousand shillings, or to imprisonment for a term not exceeding three years, or to both.

(c) Notwithstanding the provisions of subsection (1), the Bank may permit such person or class of persons as it may specify, to transact foreign exchange business without a license, subject to such conditions as it may impose.

– **Section 33B. Licensing of authorized dealers**

(a) A person proposing to transact foreign exchange business shall, before commencing such business, apply to the Bank for a license.

- Money Remittance Regulations 2013.

– **Regulation 4 - Licensing**: A person shall not provide money remittance services unless such person:

(a) is incorporated as a limited liability company under the Companies Act;

(b) has obtained the approval of the Bank for the proposed business name before incorporation and has the words 'money remittance' or 'money transfer' as a brand name; and

(c) is licensed to provide money remittance services under these regulations.

3. *Plausibility premise*: Regulation 4 is the most plausible rule in this case.
4. *Conclusion*: Therefore $\text{VM}_{\text{BitPesa}}$ blockchain-driven, forex platform for international money transfers, should be compliant with Regulation 4.
5. *Critical questions*:

(a) How satisfactory is Regulation 4 itself as a rule regulating blockchain-driven forex platforms for international money transfers apart from the alternative rules available in the dialogue?

Regulation 4 defines the conditions under which an entity can be licensed to provide money remittance services.

(b) How much better a rule is Regulation 4 than the alternative rules so far in the

dialogue?

It is a subsidiary provision on the issue, hence more specific.

(c) How far has the dialogue progressed? If the dialogue is an inquiry, how thorough has the search been in the investigation of the case?

We have established the relevant rule, we now need to determine the possible claims under that rule.

7.2.2.3 Legal claim generation

The legal claim is stated with the help of the argument from legal claim as follows:

1. *General rule premise*: Money remittance is an activity licensed by the CBK under regulation 4 of the Money Remittance Regulations 2013, laws of Kenya.
2. *Performance premise*: To perform international money transfers, $VM_{BitPesa}$ must be licensed by the CBK as an *authorized money remittance provider*.
3. Warrant: $VM_{BitPesa}$ violates regulation 4 if it facilitates money remittance services without authorization.
4. *Conclusion*: Therefore, BitPesa must obtain a license to become an authorized money remittance provider under regulation 4 of the 2013 regulations.
5. *Else*: It violates the cited regulation.

7.2.2.4 Legal action generation

The legal action is given with the following argument from legal action:

1. *Established rule premise*: If An entity X is not *an authorized money remittance provider* under section 33A of the Central Bank Act, then it commits an offense when it transacts foreign exchange business.
2. *Penalty premise*: X is liable on conviction to a fine not exceeding 500,000 shillings or imprisonment for three years, or both under section 33A(2) of the Central Bank Act.
3. Violation premise: $VM_{BitPesa}$ facilitates international money transfers but it is not licensed as *an authorized money remittance provider*.
4. *Conclusion*: Therefore: BitPesa is is potentially liable for the stated penalties.

7.2.2.5 Exceptional case generation

BitPesa argues an exception with the following argument from exception:

1. *Exception premise*: IF the following cases read together amount to an exemption to the licensing rule, THEN the rule can be waived in that case.
    - Section 33A(3): Notwithstanding the provisions of subsection (1), the bank may permit such person or class of persons as it may specify, to transact foreign exchange business without a license, subject to such conditions as it may impose.
    - CBK issued a public notice in December 2015 clarifying that virtual currencies are unregulated in Kenya.
    - CBK has not moved to enforce any penalties against $\text{VM}_{\text{BitPesa}}$.
2. *Minor premise*: That (a) CBK has not enforced penalties against BitPesa; and (b) it has issued a notice that virtual currencies are unregulated in Kenya, ought to imply a permission by the CBK under section 33A(3) for $\text{VM}_{\text{BitPesa}}$ to continue transacting foreign exchange in the form of money remittance without a license.
3. *Conclusion*: Therefore, $\text{VM}_{\text{BitPesa}}$ is exempted from authorization [licensed as an authorized money remittance provider] under section 33A of the Central Bank Act.
4. *Critical questions*:
    (a) Are the two cases recognized types of exception?
    Section 33A(3) is a provision of the law and therefore recognized. The public notice is not a formal exemption.
    (b) If it is not a recognized case, can evidence that the established rule does not apply to it be given?
    The CBK did not claim that bitcoin was illegal, but the lesser - that bitcoin and similar products are not legal tender neither are they regulated in Kenya.
    (c) If it is a border line case, can comparable cases be cited?
    Other countries has legislated against Bitcoin to regulate money remittances using bitcoin.

7.2.3 BitPesa's problem

So the main problem is that CBK has declined to recognize let alone authorize BitPesa as a payment service provider which could potentially vitiate the startup's business model in Kenya. However, they have not moved to enforce any penalties against the startup and there is a likelihood that an exemption applies as above. However, is it sufficient?

7.2.3.1 Legal issue identification

The legal issue is whether the identified exception is adequate to protect the startup from further enforcement proceedings by CBK in the future. The operative fact is *permit* in section 33A - *the bank may **permit** such person or class of persons as it may specify, to transact foreign exchange business without a license, subject to such conditions as it may impose.*

7.2.3.2 Legal interpretations generation

There is no linguistic definition of the term *permit* in the Central Bank Act. We therefore move to systemic arguments.

Systemic arguments

The foregoing inferred permission is likely to be rebutted by an argument from principle as follows:

Argument from principle (volitional conduct)

1. *Premise 1*: [Volitional conduct is required to activate a legal provision which is expressed in active affirmative terms], is a principle of the legal system which affects the interpreta-

tion and therefore the evaluation of the term [Permit in section 33A of the Central Bank Act].

2. *Premise 2*: Interpreting *permit* as requiring volitional conduct of the CBK is necessary to ensure commitment to the stated principle.
3. *Conclusion*: Permit in section 33A ought to be interpreted as requiring volitional conduct of the CBK.
4. *Critical questions*:
   (a) What is the evidence that the established principle applies to the term *permit* in section 33A of the Central Bank Act?
   The section implies that active consideration by the CBK is necessary in exercising discretion to decide whether to authorize an entity to transact without a license and impose any conditions it deems necessary in that regard.
   (b) Are there other principles that might conflict with or override this one?
   None have been identified.
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance?
   There is no indication of circumstances that warrant an exception of the section from the principle.

Equally, BitPesa may respond with an argument from principle to argue that CBK has no regulatory power over them as there is no definition of virtual currency in Kenyan law.

Argument from principle (Nulla poena sine lege stricta)

1. *Premise 1*: [There is to be no penalty without strict law] is a principle of the legal system which affects the interpretation and therefore the evaluation of [whether the Central Bank can regulate $VM_{BitPesa}$ with regard to virtual currencies.]
2. *Premise 2*: The following interpretation is necessary to ensure commitment to the stated principle [CBK has no power to regulate $VM_{BitPesa}$ where no specific laws on virtual currencies have been promulgated].

3. *Conclusion*: Section 33A of the Central Bank Act ought to be interpreted as meaning CBK has no power to regulate $VM_{BitPesa}$ where no specific laws on virtual currencies have been promulgated.
4. *Critical questions*:
   (a) What is the evidence that the established principle applies to the Central Bank? The Bank is empowered to levy criminal penalties under section 33A. This principle ensures that there is no penalty without strict law. It prohibits the application of statutory laws by analogy in criminal law.
   (b) Are there other principles that might conflict with or override this one? Yes, the forthcoming argument on legal tender.
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance? No.

The bank could respond with an argument from intention that since there is no definition of legal tender, the term could therefore be extended to virtual currencies.

Argument from intention (legal tender)

1. *Premise 1*: Parliament did not define 'legal tender' despite numerous uses of the term when it promulgated the Central Bank Act.
2. *Premise 2*: This ought to be interpreted as Parliament's intention that the term should have an ambulatory or movable meaning [with regard to use of virtual currencies in $VM_{BitPesa}$].
3. *Conclusion*: Therefore, the term 'legal tender' ought to be extended to cover virtual currencies in $VM_{BitPesa}$.
4. *Critical questions*:
   (a) How was the intention defined? Via a presumption of legislative intention employed in the legislative process when drafting the Act.
   (b) Does the description of the interpretation in question actually fit the definition of the intention? Yes.

The Bank could come back with the argument that other jurisdictions have outlawed bitcoin for its association with money laundering. This takes an argument from contextual harmonization as follows:

Argument from contextual harmonization (AML)

1. *Established rule premise*: $\text{VM}_{\text{BitPesa}}$ as a potential money remittance operator under the Central Bank Act is required to comply with The Proceeds of Crime and Anti-Money Laundering Act No. 9 of 2009.
2. *Minor premise*: $\text{VM}_{\text{BitPesa}}$ transactions in virtual currencies such as bitcoin are largely untraceable and anonymous making them susceptible to abuse by criminals in money laundering and financing terrorism.
3. *Conclusion*: Therefore, in transacting with virtual currencies, $\text{VM}_{\text{BitPesa}}$ is potentially in violation of the Proceeds of Crime and Anti-Money Laundering Act No. 9 of 2009.
4. *Critical questions*:
   (a) Is contextual harmonization described required? Yes, the referenced Act forms part of the regulatory framework for the financial sector.
   (b) Are there other established rules that might conflict or override this one? None have been identified at this stage.
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance? BitPesa claims that it has implemented AML and KYC policies in compliance with Kenyan regulations and has freely submitted these to the Central Bank.

Argument from analogy (restriction)

The Bank could buttress this with an analogy showing jurisdictions that have outlawed bitcoin to counter its use for money laundering and financing terrorism.

1. *Similarity premise*: Generally the regulatory framework for fiat currencies in Kenya is similar to those of other countries.

2. *Base premise*: Many jurisdictions have banned, restricted, or warned against the use of virtual currencies.
3. *Conclusion*: Therefore, virtual currencies ought to be restricted in Kenya in line with other jurisdictions.
4. *Critical questions*:
   (a) Are there differences between Kenya and other countries that would tend to undermine the force of the similarity cited? None have been identified at this stage.
   (b) Have the regulatory frameworks in other jurisdictions banned, restricted or warned against virtual currencies? Actually, many jurisdictions have shied from strict regulation and the legal status of virtual currencies varies substantially and changes frequently.
   (c) Are there some other countries which have not banned, restricted or warned against the use of virtual currencies? Yes, e.g. Sweden, Luxembourg and the US. Australia also officially confirmed it would treat bitcoin 'just like money' as from as from 1st July 2017 and it will no longer be subject to double taxation.

Argument from analogy (Bitlicense)

BitPesa could counter this argument drawing on analogy with the jurisdictions that have implemented legislation to regulate bitcoin as follows:

1. *Similarity premise*: Generally $VM_{BitPesa}$ is similar to firms in other jurisdictions trading in virtual currencies.
2. *Base premise*: In addition to AML legislation, these firms are regulated in their respective jurisdictions with the following features: a license usually referred to as a bitlicense, capital requirements, custody and protection of consumer assets, reporting and financial disclosures, a cyber-security program.
3. *Conclusion*: Therefore, CBK ought to regulate $VM_{BitPesa}$ in the following terms: a license usually referred to as a bitlicense, capital requirements, custody and protection of consumer assets, reporting and financial disclosures, an anti-money laundering program, and a cyber-security program.
4. *Critical questions*:

(a) Are there differences between Kenya and other countries that would tend to undermine the force of the similarity cited? The CBK Governor has claimed that Kenya lacks the technical capacity to handle virtual currencies and the related blockchain technology.

(b) Are firms in other jurisdictions regulated in the terms stated above? Yes e.g. the New York State Title 23 Chapter 1 Part 200 - Regulations of the superintendent of financial services on virtual currencies.

(c) Are there some other cases where firms transacting in virtual currencies are not regulated with the above features? Yes, Many jurisdictions seem to have adopted a wait and see approach, not regulating nor entirely outlawing virtual currencies as they will prosecute fraud and money laundering offenses related to bitcoin.

Argument from analogy by classification (M-Pesa)

BitPesa could draw an analogy of itself and previous innovations that were supported in a pseudo-sandbox fashion in order to allow them to come to term.

1. *Premise 1*: Generally $\text{VM}_{\text{M-Pesa}}$ had the following features when it was launched:
   - M-Pesa was highly disruptive in financial services in Kenya;
   - Safaricom, a telecom operator, was acting as a credit provider which required a banking license.
2. *Premise 2*: $\text{VM}_{\text{BitPesa}}$ has the following features:
   - BitPesa is potentially highly disruptive in financial services in Kenya
   - $\text{VM}_{\text{BitPesa}}$ offers mobile money remittance which requires a CBK license to become an authorized money remittance provider.
3. *Conclusion 1*: Legally, $\text{VM}_{\text{M-Pesa}}$ and $\text{VM}_{\text{BitPesa}}$ should be classified in the same way with respect to the above features.
4. *Premise 3*: It is by virtue of the above features that CBK allowed $\text{VM}_{\text{M-Pesa}}$ to operate without a banking license despite political opposition and lobbying by banks.
5. *Conclusion 2*: Because $\text{VM}_{\text{M-Pesa}}$ and $\text{VM}_{\text{BitPesa}}$ are substantially similar, $\text{VM}_{\text{BitPesa}}$ also ought to be allowed to be trialed without a license in this initial phases of its business

model despite the opposition by Safaricom.

6. *Critical questions*:
   (a) What evidence is there that $VM_{M\text{-}Pesa}$ is definitely operating without a license as opposed to evidence indicating room for doubt whether it should be so classified? The unstructured discovery part of the value modeling and the case exposition from the confrontation stage.
   (b) Is the legal classification in the classification premise based merely on assumption about word usage that is subject to doubt? No. It may appear so from the term 'Pesa' but the classification is based on the features of both entities.
   (c) Are there differences between $VM_{M\text{-}Pesa}$ and $VM_{BitPesa}$ that would tend to undermine the force of the similarity cited? None have been identified.
   (d) Is there some other case that is also similar to $VM_{M\text{-}Pesa}$ but in which the identified features are false? None has been identified.

Teleological - evaluative arguments

We now need to apply the arguments at this stage to choose between the foregoing interpretations that we have already developed.

Argument from purpose

The first argument against the implied permission is the founding purpose of the CBK Act and related legislation.

1. *Goal premise*: The Kenyan legislature's purpose in enacting section 33A of the Central Bank Act was to license and supervise authorized dealers in order to protect depositors.
2. *Alternative premise*: Therefore, it is necessary that at least one of the following interpretations of the term *permit* ought to fulfill this purpose:
   (a) $VM_{BitPesa}$ is potentially liable to penalties because *permit* in section 33A ought to be interpreted as requiring volitional conduct of the CBK to permit $VM_{BitPesa}$ to transact in virtual currencies.

(b) $VM_{BitPesa}$ is not potentially liable to penalties because Section 33A of the Central Bank Act ought to be interpreted as meaning CBK has no power to regulate $VM_{BitPesa}$ where no specific laws on virtual currencies have been promulgated.

3. *Selection premise*: Interpretation 2(a) is the most compatible to fulfill the identified purpose.
4. *Practicality premise*: No legislative intention prevents the application of the identified interpretation, as far as is known.
5. *Side effects premise*: Realizing the identified purpose is more acceptable to the legislature than not applying the chosen interpretation.
6. *Conclusion*: Therefore, interpretation 2(a) is the most compatible interpretation with the legislature's purpose to license and supervise authorized dealers in order to protect depositors.
7. *Critical questions*:

   (a) *Alternative means question*: Are there alternative means of realizing the identified purpose, other than the chosen interpretation? The government could develop regulations to license and monitor entities transacting in virtual currencies.

   (b) *Acceptable/Best option question*: Is the chosen interpretation an acceptable interpretation, is it the best alternative? While an acceptable interpretation, it is not the best alternative as it has been said to have a chilling effect around the market on investors, startups and developers experimenting in fintech solutions.

   (c) *Possibility question*: Is there a legislative intention or other rule that prevents the application of the chosen interpretation? None has been identified.

   (d) *Negative side effects question*: Are there negative side effects of applying the chosen interpretation that ought to be considered? The chilling effect could hinder innovation in the budding fintech market and other areas that have potential for blockchain technology in Kenya e.g. lands, transport and immigration.

   (e) *Conflicting goals question*: Does the legislature have other purposes which could potentially conflict with the chosen one? Yes, the legislature needs to harmonize the current regulatory framework with National ICT Policies for innovation, and technology convergence.

Argument from substantive reasons (National ICT policy)

The other evaluative argument is for substantive socio-economic reasons as follows:

1. *Substantive premise*: The following National ICT policies are particular substantive socio-economic reasons in the legal order relevant to the immediate interpretation of the term *permit*.
   (a) Encourage innovation, attract investment and promote ease of doing business for a positive socio-economic impact through ICT.
   (b) Promote technology convergence which ought to include blockchain-enabled convergence of artificial intelligence (AI), Internet of Things (IoT), autonomous robotics, and virtual reality.
   (c) Support emerging ecosystems which ought to include, shared ledger systems and thereby to issue the relevant guidance and adaptive regulation to the financial sector.
2. *Alternative premise*: Each of the following interpretations of the term should seek to achieve these substantive reasons.
   (a) $\text{VM}_{\text{BitPesa}}$ is potentially liable to penalties because *permit* in section 33A ought to be interpreted as requiring volitional conduct of the CBK to permit $\text{VM}_{\text{BitPesa}}$ to transact in virtual currencies.
   (b) $\text{VM}_{\text{BitPesa}}$ is not potentially liable to penalties because Section 33A of the Central Bank Act ought to be interpreted as meaning CBK has no power to regulate $\text{VM}_{\text{BitPesa}}$ where no specific laws on virtual currencies have been promulgated.
3. *Selection premise*: Interpretation 2(b) is the interpretation that achieves SR most successfully.
4. *Conclusion*: Therefore 2(b) is the most plausible interpretation compatible with the stated substantive reasons.
5. *Critical questions*:
   (a) How satisfactory is the chosen interpretation itself as a substantive reason, apart from the alternative interpretations available so far in the dialogue? The chosen interpretation is not ideal but it gives a much needed lifeline for investments in business models such as $\text{VM}_{\text{BitPesa}}$ to mature.

(b) How much better a representation of the substantive reason is the chosen interpretation than the alternative interpretations so far in the dialogue? This interpretation highlights the need for a delicate balance and a flexible regulatory regime to support emerging ecosystems where new innovations are encouraged.

(c) How thorough has the search been in the investigation of the case? Would it be better to continue the dialogue further, instead of drawing a conclusion at this point? The investigation has been extensive and can be concluded at this point as there is no strong indication of a trans-categorical argument.

7.2.3.3 BitPesa's legal argumentation

We now have to resolve all the arguments made using the argumentation model identified in subsection 2.4.6. First we detail the arguments for each side according to their hierarchical order after which we will apply the interpretive model.

1. *Legal issue premise*: 'Permit' is an open textured/defeasible term that requires interpretation to determine compliance of $VM_{BitPesa}$.
2. *Interpretive argument premise*: 'Permit' may be interpreted by a set of canons supplemented by plausible conditionals and other statements that function as missing parts of enthymemes:
   (a) **CBK:** $VM_{BitPesa}$ is potentially liable to penalties because *permit* in section 33A ought to be interpreted as requiring volitional conduct of the CBK to permit $VM_{BitPesa}$ to transact in virtual currencies (clarifying interpretation from principle).
      i. The term 'legal tender' ought to be extended to cover virtual currencies in $VM_{BitPesa}$ (argument from intention).
      ii. In transacting with virtual currencies, $VM_{BitPesa}$ is potentially in violation of the Proceeds of Crime and Anti-Money Laundering Act No. 9 of 2009 (argument from contextual harmonization).
      iii. Virtual currencies ought to be restricted in Kenya in line with other jurisdictions (argument from analogy (restriction)).

iv. This is the most compatible interpretation with the legislature's purpose to license and supervise authorized dealers in order to protect depositors. (argument from purpose).

(b) **BitPesa:** $VM_{BitPesa}$ is not potentially liable to penalties because Section 33A of the Central Bank Act ought to be interpreted as meaning CBK has no power to regulate $VM_{BitPesa}$ where no specific laws on virtual currencies have been promulgated (clarifying interpretation from principle).

i. CBK ought to regulate $VM_{BitPesa}$ in the following terms: a license usually referred to as a bitlicense, capital requirements, custody and protection of consumer assets, reporting and financial disclosures, an anti-money laundering program, and a cyber-security program (argument from analogy (Bitlicense)).

ii. Because $VM_{M\text{-}Pesa}$ and $VM_{BitPesa}$ are substantially similar, $VM_{BitPesa}$ also ought to be allowed to be trialed without a license in this initial phases of its business model despite the opposition by Safaricom (argument from analogy by classification (M-Pesa)).

iii. This interpretation is the most plausible interpretation compatible with the stated substantive reasons:

A. Encourage innovation, attract investment and promote ease of doing business for a positive socio-economic impact through ICT.

B. Promote technology convergence which ought to include blockchain-enabled convergence of artificial intelligence (AI), Internet of Things (IoT), autonomous robotics, and virtual reality.

C. Support emerging ecosystems which ought to include, shared ledger systems and thereby to issue the relevant guidance and adaptive regulation to the financial sector.

(Argument from substantive reasons (National ICT Policy).

3. *Interpretive model premise*: Unless there is a strong indication of a $C_{Trans\text{-}categorical}$ argument, then:

(a) the most plausible/strongest canon Ci is represented:

i. in the first instance by a $C_{\text{Linguistic}}$ argument unless a C_{Systemic} argument applies;

ii. in the second instance by a C_{Systemic} argument unless a $C_{\text{Teleological-evaluative}}$ argument applies;

iii. in the third instance a $C_{\text{Teleological-evaluative}}$ argument;

(b) Else:

i. the most plausible/strongest argument is represented by a $C_{\text{Linguistic}}$ argument supported by any $C_{\text{Trans-categorical}}$ argument.

4. *Conclusion*: Therefore, the strongest interpretation is the clarifying interpretation from principle 2(b) by BitPesa: VM_{BitPesa} is not potentially liable to penalties because Section 33A of the Central Bank Act ought to be interpreted as meaning CBK has no power to regulate VM_{BitPesa} where no specific laws on virtual currencies have been promulgated (clarifying interpretation from principle).

(a) CBK ought to regulate VM_{BitPesa} in the following terms: a license usually referred to as a bitlicense, capital requirements, custody and protection of consumer assets, reporting and financial disclosures, an anti-money laundering program, and a cybersecurity program (argument from analogy (Bitlicense)).

(b) Because $VM_{\text{M-Pesa}}$ and VM_{BitPesa} are substantially similar, VM_{BitPesa} also ought to be allowed to be trialed without a license in this initial phases of its business model despite the opposition by Safaricom (argument from analogy by classification (M-Pesa)).

(c) This interpretation is the most plausible interpretation compatible with the stated substantive reasons:

i. Encourage innovation, attract investment and promote ease of doing business for a positive socio-economic impact through ICT.

ii. Promote technology convergence which ought to include blockchain-enabled convergence of artificial intelligence (AI), Internet of Things (IoT), autonomous robotics, and virtual reality.

iii. Support emerging ecosystems which ought to include, shared ledger systems

and thereby to issue the relevant guidance and adaptive regulation to the financial sector.

(Argument from substantive reasons (National ICT Policy).

5. *Critical questions*:

   (a) How satisfactory is the chosen clarifying argument itself in interpreting the term permit, apart from the alternative arguments available so far in the dialogue? Though not entirely accurate, this argument is the most reflective of the current circumstances where $VM_{BitPesa}$ has been allowed to continue operating through other mobile money providers.

   (b) How much better an interpretive argument is the chosen argument than the alternative arguments so far in the dialogue? Compared to the other argument, this argument gives a more flexible solution to the stalemate.

   (c) How far has the dialogue progressed? How thorough has the search been in the investigation of the case? The dialogue has progressed through the three levels of argumentation and is exhaustive for the first part.

   (d) Would it be better to continue the dialogue further, instead of drawing a conclusion at this point? No.

7.2.4 The BitPesa solution

7.2.4.1 Prescription generation

The prescriptive rule in this case is section 33A(3) of the Central Bank Act:

> Notwithstanding the provisions of subsection (1), the Bank may permit such person or class of persons as it may specify, to transact foreign exchange business without a license, subject to such conditions as it may impose.

We now recast this rule with the interpretations developed in order to derive appropriate prescriptions that will define the compliance behavior. The interpretations are extracted from the conclusion of the legal argumentation and the final prescrip-

tion is as follows: The Bank may permit such person or class of person's as it may specify, to transact foreign exchange business without a license, subject to the following conditions: an anti-money laundering program, capital requirements, custody and protection of consumer assets, reporting and financial disclosures, a cyber-security program.

7.2.4.2 Requirements specification

1. Ubiquitous requirements: The system shall establish protocols to authenticate each transaction with regard to:
   (a) An anti-money laundering program
   (b) Capital requirements
   (c) Custody and protection of consumer assets
   (d) Reporting and financial disclosures
   (e) A cyber-security program
2. Optional features: as a show of prudence and good faith, the system may implement automated software for end-to-end user identification.

7.2.4.3 Compliance pattern generation

There are five ubiquitous requirements and 1 optional requirement.

Context: BitPesa has a competence i.e. blockchain-driven forex platform that enables international money transfers.

Problem: The CBK has refused to authorize or recognize BitPesa as a payment service provider or an authorized money remittance provider, which could potentially vitiate its business model in Kenya.

Solution: To mitigate the risk, BitPesa ought to implement the following:

- 5 ubiquitous requirements for an anti-money-laundering program, capital require-

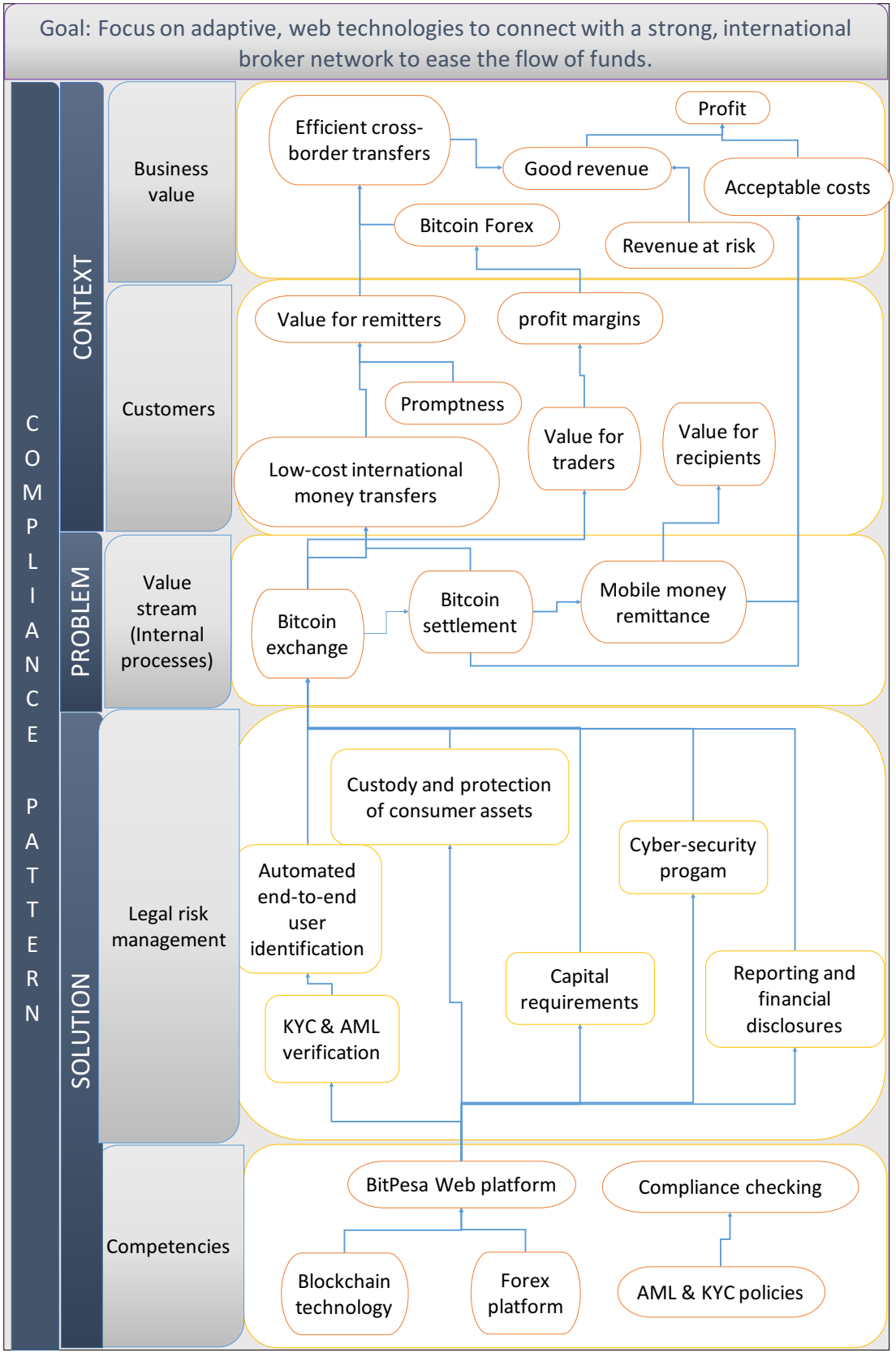

Figure 7.5: BitPesa strategy map with risk management

ments, custody and protection of consumer assets, reporting and financial disclosures, and a cyber-security program.

- 1 optional feature for automated software for end-to-end user identification.

7.2.4.4 Legal risk management

The solutions are first introduced as activities to the $VM_{BitPesa}$ strategy map as shown in Figure 7.5 and then onto the VDMbee platform prototype as activities that manage the legal risk, and thereby mitigating the value-at-risk for the firm. We implemented the As-Is and To-Be phases of BitPesa's value model and the details about the implementation can be found at BitPesa Value Model.

7.3 FirstLife

FirstLife is a new social network in Turin, a platform for social innovation activities; based on an interactive map it allows citizens to share information on the map, to create groups, to co-produce services, all the while using a smartphone. The startup has challenges managing data to understand the obligations related to the possible scenarios in evolution of the business model. What type of data should they collect, how long can they keep it, in what type of context, how should they ask for it, how do they alter the MoU, in what scenarios should they communicate to the relevant authority? They recently received a *cease and desist letter* for data they had collected from what they deemed a public entity. The said entity, a museum, had posted the information onto its Google Maps portal. We therefore explore a regulatory conversation that will help us manage this issue.

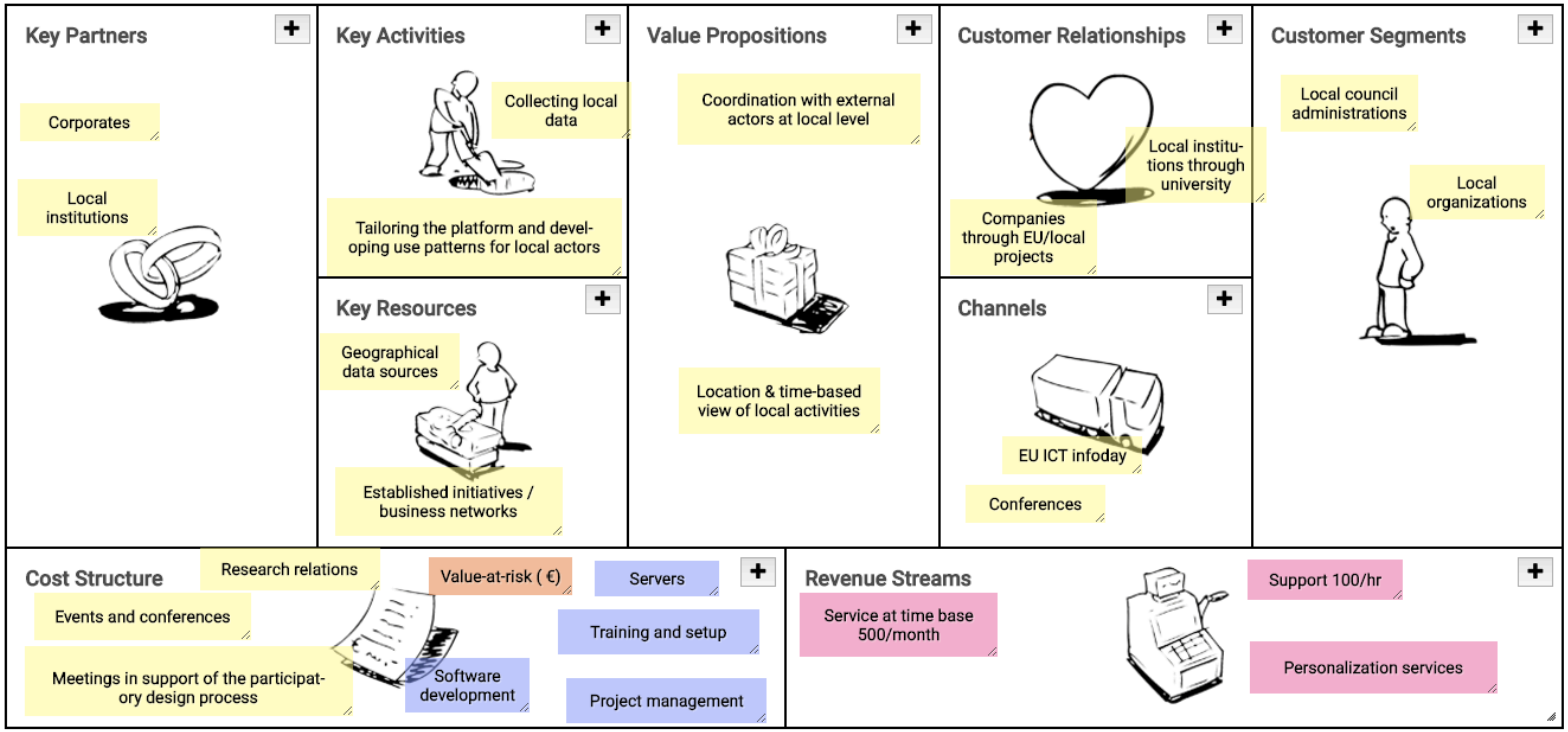

Figure 7.6: FirstLife business model canvas

7.3.1 FirstLife's context

7.3.1.1 Value modeling

The unstructured discovery for Firstlife is conducted via interviews and online research from its own website. This gives us enough information to begin the structured discovery using a business model canvas, a value network and a strategy map.

FirstLife's business model canvas

Figure 7.6 shows how FirstLife serves local council administrations and organizations. They do so through their geo-referenced web platform, and conferences to build capacity with their stakeholders. Their research efforts facilitate relations with relevant companies and local institutions. EU and local projects avail relations with companies while the University arm pursues relations with local institutions. Their main value propositions include (a) coordination with external actors at a local level and (b) local and time-based view of local activities on the web platform. Activities in that regard include (a) collecting local data, and (b) tailoring the platform and developing use patterns for local actors. The main resources for these are geographical data sources, established initiatives and business networks. The key partners are the local municipalities, local institutions that render services on behalf of those municipalities. Their main costs involve maintaining their relationships and developing technological solutions. The revenue streams come from services rendered on the platform and support functions.

FirstLife's value network

The value network captured in Figure 7.7 depicts the flow of value between FirstLife and its key partners. It features three participant networks at work for: collaboration,

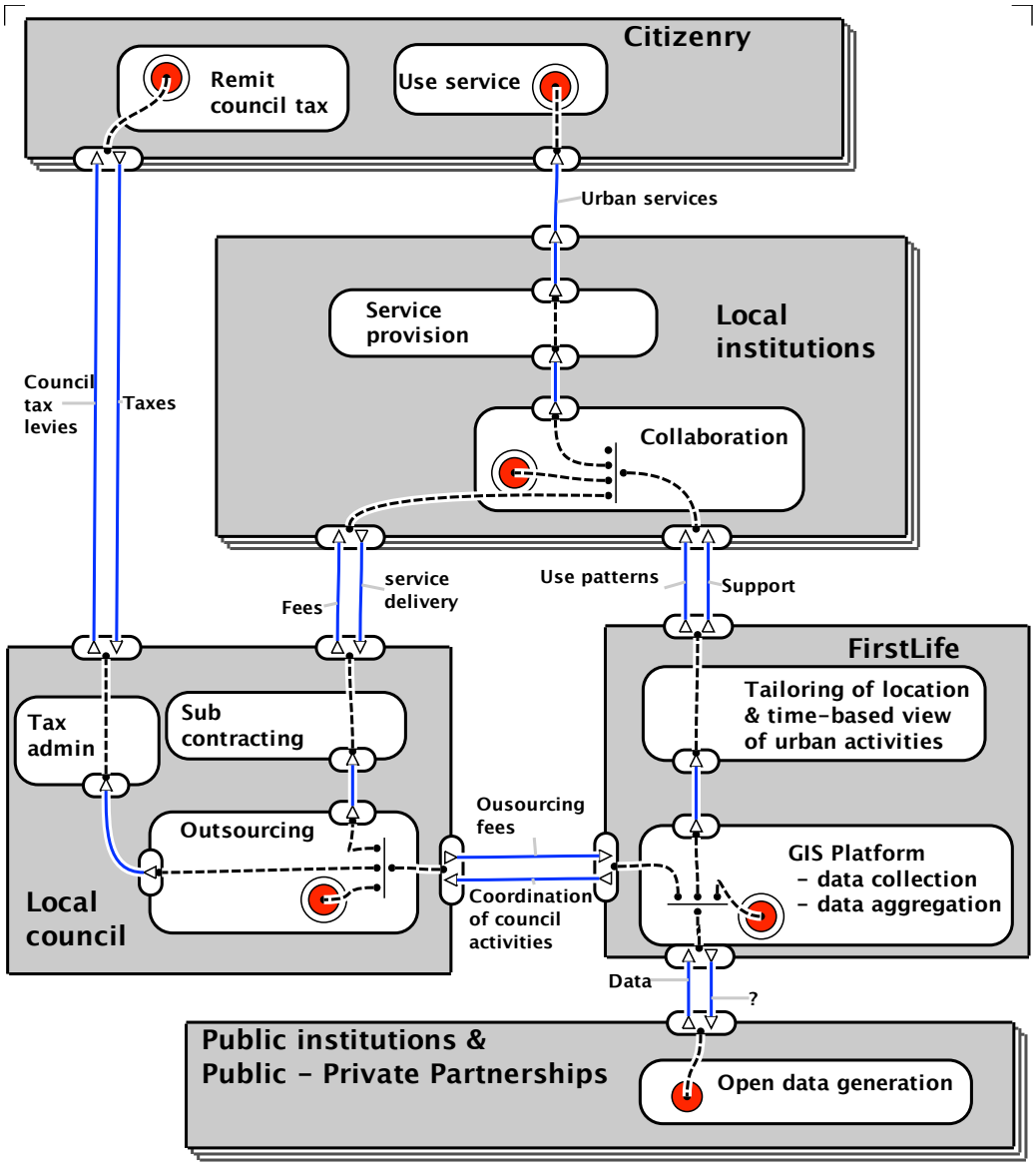

Figure 7.7: FirstLife value network

data aggregation and outsourcing. Local councils outsource their service mandates to FirstLife who in turn coordinate the local institutions to delivers services to the public. To do so, FirstLife needs to collect and aggregate data regarding public institutions in order to run the services on their web platform, which may result in potential copyright infringement.

FirstLife's strategy map

The strategy map in Figure 7.8 traces how FirstLife's strategy gets actualized in its internal processes. The goal, to build a civic social network for supporting urban networks and institutions in daily activities. It aims to improve cooperation through a participatory and evolutionary design process, research and forecasting. This creates value for the local council and the organizations it works with to provide services to the public. The internal processes supporting this include: data collection and integration, geo-tagging and mapping, real-time data communication, and designing use patterns. The main resource applied is a web platform which enables visualization of urban knowledge and indexing of temporal and spatial features. With this information, we proceed to build the value model on the VDMBee platform which can be viewed here.

7.3.1.2 Legal domain identification

From the foregoing we have established that FirstLife's competence is a geo-referenced web platform technology that enables it to re-use Public Sector Information (PSI) for commercial purposes to coordinate urban institutions. We classify this technology under the Re-use of Public Sector Information (RPSI) domain as follows:

1. *Individual premise*: $\text{VM}_{\text{FirstLife}}$ has a geo-referenced web platform that re-uses open data to coordinate activities of urban institutions.

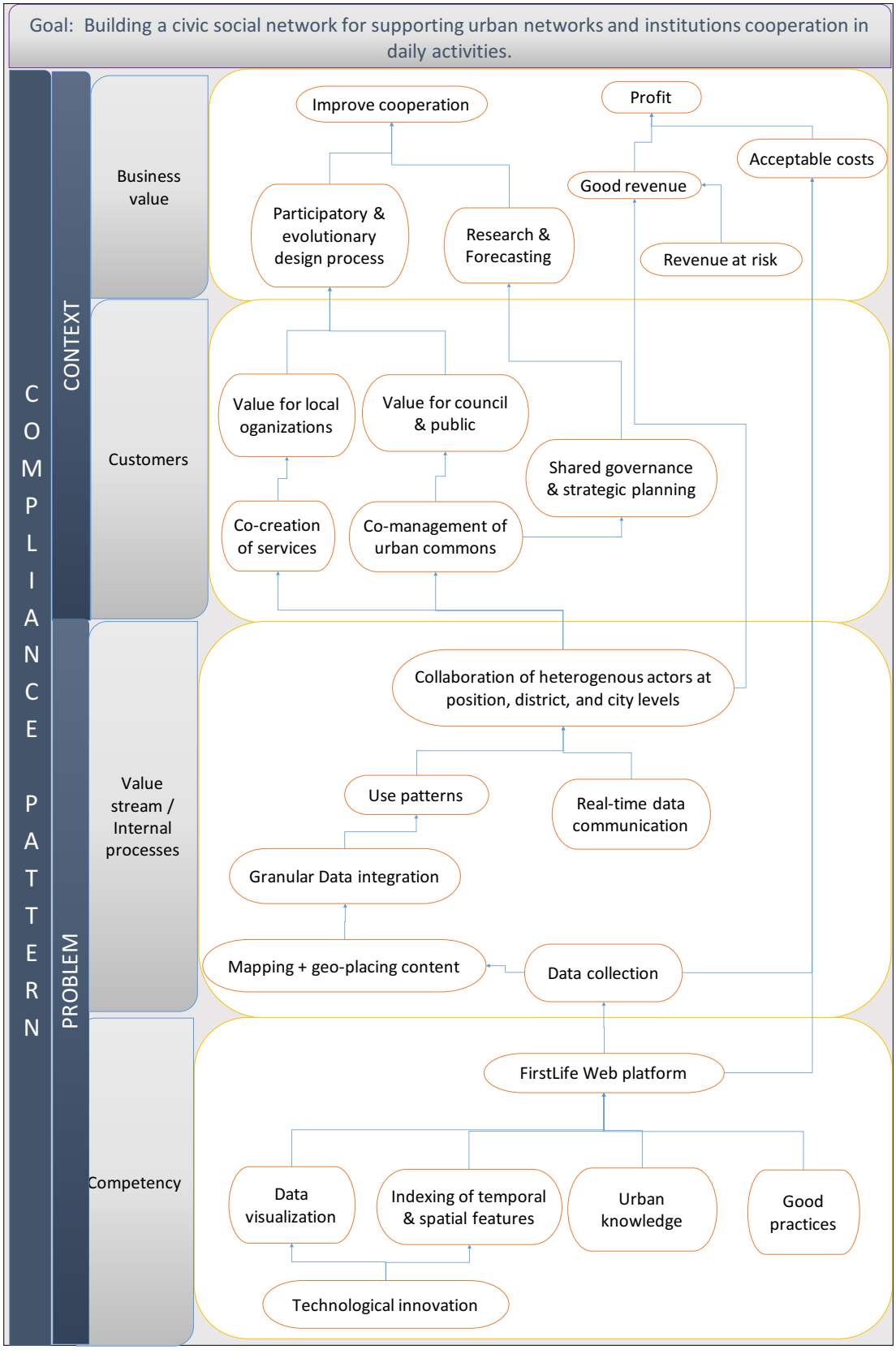

Figure 7.8: FirstLife strategy map.

2. *Legal classification premise*: for all x if x has this competence, then x ought to be regulated by the RPSI domain.
3. *Conclusion*: $VM_{FirstLife}$ is governed by the RPSI domain.
4. *Critical questions*:
   (a) Does $VM_{FirstLife}$ definitely have the said activity, or is there room for doubt? This has been ascertained from the discovery and the interview with the project and technical manager.
   (b) Can the legal domain classification be said to hold strongly, or is it subject to doubt? The PSI directive allows for access to all content under national access and re-use beyond the initial purpose for commercial and non-commercial purposes.

7.3.1.3 Prescriptive rule identification

We trace the prescriptive rule from within PSI law with the following argument for rule identification:

1. *Domain Premise*: Re-use of PSI is an activity in $VM_{FirstLife}$.
2. *Rule premise*: The following set of rules govern this activity:
   (a) Article 3(2) RPSI Directive 2003/98/EC - **General principle**: For documents in which libraries, including university libraries, museums and archives hold intellectual property rights, Member States shall ensure that, where the re-use of such documents is allowed, these documents shall be re-usable for commercial or non-commercial purposes in accordance with the conditions set out in Chapters III and IV.
   (b) Article 1(2) of the Italian legislative Decree No 36 of 24 January 2006 - **Subject matter and scope**: Public sector bodies and bodies governed by public law shall ensure that documents to which this Legislative Decree applies shall be re-usable for commercial or non-commercial purposes in accordance with the conditions set out in this Decree, including documents in which libraries, including university libraries, museums and archives hold intellectual property rights, where the re-use of such documents is allowed in accordance with provisions in Part II, Title II, Chapter III

of Legislative Decree No 42 of 22 January 2004, and those in Part II, Title VII, Chapter II of Legislative Decree No 196 of 30 June 2003.

3. *Plausibility premise*: Rule 2(b) is the most plausible rule in this case.
4. *Conclusion*: Therefore $VM_{FirstLife}$ should comply with the identified rule.
5. *Critical questions*:
   (a) How satisfactory is rule 2(b) itself as a rule regulating RPSI apart from the alternative rules available in the dialogue? It defines the scope of re-use and incorporates content from libraries, museums and archives.
   (b) How much better a rule is 2(b) than the alternative rules so far in the dialogue? The rule shows the Italian domestication of the EU directive and is therefore more specific and directly applicable to $VM_{FirstLife}$ which is a an Italian startup.
   (c) How far has the dialogue progressed? If the dialogue is an inquiry, how thorough has the search been in the investigation of the case? The search is not advanced, there may be need to further examine Italian law.

7.3.1.4 Legal claim generation

The legal claim is stated with the help of the argument from legal claim as follows:

1. *General rule premise*: $VM_{FirstLife}$ must obtain a license to re-use information from a private museum.
2. *Warrant*: $VM_{FirstLife}$ infringes copyright if it re-uses information from a private entity without authorization.
3. *Conclusion*: Therefore, $VM_{FirstLife}$ must obtain a license.
4. *Else*: It infringes the museum's copyright.

7.3.1.5 Legal action generation

The legal action is given with the following argument from legal action:

1. *Established rule premise*: If $VM_{FirstLife}$ is not authorized to re-use PSI information under Art. 1(2), it infringes copyright when it re-uses the information of a private museum.

   (a) The private museum has a right to sue $VM_{FirstLife}$ under the Law for the Protection of Copyright and Neighboring Rights No. 633 of April 22 1941 Part III Chapter III.
   (b) $VM_{FirstLife}$ is liable to the private museum for infringement remedies including: injunctions, impounding and disposition of infringing articles, damages and accounts for profit, costs and attorney's fees and penal offenses.
2. *Infringement premise*: $VM_{FirstLife}$ has not sought authorization from the museum for re-use of particular information harvested online.
3. *Conclusion*: Therefore: FirstLife is potentially liable for the stated penalties.

7.3.1.6 Exceptional case generation

$VM_{FirstLife}$ pursued the following exception.

1. *Exception premise*: IF data collected from an online platform is governed by its Terms of Use, THEN the copyright infringement rule can be waived in that case.
2. *Minor premise*: $VM_{FirstLife}$ collected data of the museum's location from its Google Maps entry.
3. *Conclusion*: Therefore, $VM_{FirstLife}$ is exempted from violation of the museum's right under the established rule.
4. *Critical questions*:
   (a) Is the case given a recognized type of exception? Not from a legal perspective.
   (b) If it is not a recognized case, can evidence that the established rule does not apply to $VM_{FirstLife}$ be given? There is not enough evidence because Google's Terms of Service provide that the museum retains ownership of any intellectual property rights that it holds in any content that it uploads, submits, stores, sends or receives.
   (c) If it is a border line case, can comparable cases be cited? None have been identified.

The exception thus fails since critical question 4(b) shows that Google's terms of service do not rescind the museum's copyright. We will therefore not proceed with the confrontation stage but will seek to define the problem in order to manage the risk.

7.3.2 FirstLife's problem

The main problem from the foregoing is that FirstLife has data collection algorithms that can re-use restricted information without requesting for such re-use thereby infringing copyright. In this particular instance, the *cease and desist letter* was from a private museum. We therefore need to define the scope of institutions from which FirstLife can collect data without the risk of infringing copyright.

7.3.2.1 Legal issue identification

The legal issue is how $VM_{FirstLife}$ can properly delineate entities from which it can collect re-use data in order to avoid copyright infringement. This raises a number of legal questions with regard to the definitions in the identified rules:

1. What is the meaning of a public sector body?
2. What is the meaning of a body governed by public law?
3. Are these institutions presumed to include libraries, museums and archives?

7.3.2.2 Legal interpretation generation

We will apply the necessary interpretive arguments in order to clarify the meaning of the identified definitions.

7.3.2.3 Linguistic arguments

Linguistic argument from ordinary meaning (public sector body)

We use a linguistic argument to define the first two terms as follows:

1. *Definition premise*: The terms *public sector body* and *a body governed by public law* are defined in Article 2(1)(a) and (b) respectively of Legislative Decree No 36 of 24 January 2006 implementing Directive 2003/98/EC on the RPSI.

2. *Classification premise*: For all x, if x fits the definition in the identified Article, then x ought to be ascribed the standard ordinary meaning of that term.
3. *Conclusion*: The standard ordinary meaning of the terms are:
   (a) *Public sector body*: an administrative body of the State, the regions, the autonomous provinces of Trento and Bolzano, the local authorities and their unions, consortia or associations and other non-economic public entities.
   (b) *Bodies governed by public law*: bodies with a legal personality established for specific purposes of meeting needs in the general interest, not having an industrial or commercial character, whose activity is financed for the most part by the State, regional or local authorities, other public bodies or organizations governed by public law, and subject to their management supervision, or having an administrative, managerial or supervisory board, more than half of whose members are appointed by those public entities. This excludes public undertakings as defined in Article 2(1)(b) of Legislative Decree No 333 of 11 November 2003.
4. *Critical questions*:
   (a) What evidence is there that the interpretation given is an adequate definition in light of other possible definitions that might exclude the term being in the interpretation given? No other possible definitions have been identified. Moreover, the interpretations are defined in the law and are inclusive and extensive.
   (b) Is the legal classification in the classification premise based merely on a stipulative or biased definition that is subject to doubt? No, the provenance of these interpretations can be guaranteed given that they are based on statutory definitions.

Linguistic argument from ordinary meaning (museum)

The Italian Legislative Decree on RPSI does not define libraries, museums or archives and it is not clear whether the definitions in question include libraries, museums and archives. Even so, these terms are more specifically defined as follows:

1. *Definition premise*: The terms *library*, *museum* and *archive* are defined in Legislative Decree No 42 of 22 January 2004 Code of the Cultural and Landscape Heritage Second

Part Title II Chapter I Section I Article 101 (2) which defines institutions and places of culture.

2. *Classification premise*: For all x, if x fits the definition in the identified Article, then x ought to be ascribed the standard ordinary meaning of that term.
3. *Conclusion*: The standard ordinary meaning of the terms are:
   (a) *Museum*: shall mean a permanent facility which acquires, conserves, arranges and exhibits cultural property for the purposes of education and study;
   (b) *Library*: shall mean a permanent facility which gathers and conserves an organized collection of books, materials and information, written or published on any kind of support, and ensures consultation for the purposes of promoting reading and study;
   (c) *Archive*: shall mean a permanent facility which collects, inventories, and conserves original documents of historical interest and ensures consultation for purposes of study and research.
4. *Critical questions*:
   (a) What evidence is there that the interpretation given is an adequate definition in light of other possible definitions that might exclude the term being in the interpretation given? The interpretations are given in the law and they are inclusive and extensive.
   (b) Is the legal classification in the classification premise based merely on stipulative or biased definition that is subject to doubt? The provenance of these interpretations can be guaranteed given that they are based on statutory definitions.

Argument from technical meaning (public undertaking)

It is further important to understand the nature of the *public undertakings* excluded from the definition of *bodies governed by public law* in the foregoing Article 2(1)(b) of Legislative Decree No 333 of 11 November 2003. This Decree implements Directive 2000/52/EC. For brevity, we refer directly to the Directive to define a public undertaking as follows:

1. *Definition premise*: The term *public undertaking* is defined in Article 2(1)(b) of the Directive 2000/52/EC [amending Directive 80/723/EEC] on the transparency of financial

relations between Member States and public undertakings.

2. *Classification premise*: For all x, if x fits the definition in the identified Article, then x ought to be ascribed the standard technical meaning of the legal term.
3. *Conclusion*: The standard technical meaning of the legal term is: A public undertaking means any undertaking over which the public authorities may exercise directly or indirectly a dominant influence by virtue of their ownership of it, their financial participation therein, or the rules which govern it.
4. *Critical questions*:
   (a) What evidence is there that the interpretation given is an adequate definition in light of other possible definitions that might exclude the term being in the interpretation given? The interpretation is inadequate particularly given that a relatively similar phraseology has been used i.e. public institutions where public authorities have influence on an organization, has already been included in the definition of *a body governed by public law.*
   (b) Is the legal classification in the classification premise based merely on a stipulative or biased definition that is subject to doubt? The provenance of this interpretation can be guaranteed given that it is grounded in statute.

7.3.2.4 Systemic arguments

Argument from contextual harmonization

With an argument from contextual harmonization, we learn of an implication that these institutions are limited to those owned by the government thus:

1. *Major premise*: The definitions of museum, library, and archives in Article 101(2) Title II Chapter I Section I of Legislative Decree No 42 of 22 January 2004 Code of Cultural and Landscape Heritage are topographically arranged and conceptually related to Article 101(3) in same section of the code.
2. *Established rule premise*: Interpreting the stated definitions according to a) the topographic arrangement with related provisions of other statutes or b) its conceptual structure, is the established rule for the prescriptive rule.

3. *Minor premise*: The referenced Article 101(3) provides: The institutions and places indicated in paragraph 1 which belong to government bodies are designated for public enjoyment and offer a public service.
4. *Conclusion*: The expert must consider Article 101(3) while interpreting the identified definitions.
5. *Critical questions*:
   (a) Do the definitions require contextual harmonization as described? Yes, given the two provisions are topographically arranged in the same section and Article 101(3) limits the conceptual definition by showing that the institutions defined are limited to those owned by the government.
   (b) Are there other established rules that might conflict or override this one? None have been identified.
   (c) Is this case an exceptional one, that is, could there be extenuating circumstances or an excuse for noncompliance? No, this case falls within the established rule premise for interpreting the Articles in question.

7.3.2.5 Trans-categorical arguments

Argument from intention

We use a trans-categorical argument to clarify the meaning of a public undertaking given that the linguistic meaning is still not clear.

1. *Intention Premise*: The European Commission enacted Directive 2000/52/EC with the following purposes with regard to public undertakings and the Treaty establishing the European Community:
   - *Recital 2*: Various sectors of the economy which were characterized in the past by the existence of national, regional or local monopolies have been or are being opened partly or fully to the competition in the application of the Treaty or by rules adopted by the Member States and the Community. This process has highlighted the importance of ensuring that the rules of competition contained in the Treaty are fairly and effectively applied in these sectors, in particular that there is no abuse

of a dominant position within the meaning of Article 82 of the Treaty unless it is compatible with the common market, without prejudice to the possible application of Article 86(2) of the Treaty.

- *Recital 3*: In such sectors Member States grant special or exclusive rights to particular undertakings, or make payments or give some other kind of compensation to particular undertakings entrusted with the operation of services of general economic interest. These undertakings are often also in competition with other undertakings.

2. *Minor premise*: Article 2(1)(b) of Legislative Decree No 36 of 24 January 2006 defines *bodies governed by public law* as bodies with a legal personality established for specific purposes of meeting needs in the general interest, not having an industrial or commercial character, whose activity is financed for the most part by the State, regional or local authorities, other public bodies or organizations governed by public law, and subject to their management supervision, or having an administrative, managerial or supervisory board, more than half of whose members are appointed by those public entities. This excludes public undertakings as defined in Article 2(1)(b) of Legislative Decree No 333 of 11 November 2003.
3. *Intention premise*: In light of the identified purposes, the exclusion of public undertakings in Article 2(1)(b) of Legislative Decree No 36 of 24 January 2006 ought to be interpreted as excluding bodies with a legal personality entrusted with the operation of services of general economic interest of an industrial or commercial character.
4. *Conclusion*: Therefore, public undertakings are bodies with a legal personality entrusted with the operation of services of general economic interest of an industrial or commercial character.
5. *Critical questions*:
   (a) How was the intention defined? The intention is defined in the recitals of Directive 2000/52/EC which makes provisions on the transparency of financial relations between Member States and public undertakings.
   (b) Does the description of the interpretation in question actually fit the definition of the intention? Yes, because the definition of *bodies governed by public law* aims to exclude entities of a commercial or industrial nature from its definition which this

interpretation achieves satisfactorily.

7.3.3 The FirstLife solution

We can now conclude that the institutions in the following prescription qualify for RPSI in order for FirstLife to avoid potential copyright infringement.

7.3.3.1 Prescription generation

The following prescription is developed from the foregoing interpretations:

1. The following entities shall ensure that their documents shall be re-usable for commercial or non-commercial purposes.
   (a) Public sector body: an administrative body of the State, the regions, the autonomous provinces of Trento and Bolzano, the local authorities and their unions, consortia or associations and other non-economic public entities.
   (b) Bodies governed by public law: bodies with a legal personality established for specific purposes of meeting needs in the general interest, not having an industrial or commercial character, whose activity is financed for the most part by the State, regional or local authorities, other public bodies or organizations governed by public law, and subject to their management supervision, or having an administrative, managerial or supervisory board, more than half of whose members are appointed by those public entities.
2. If owned by government, and if allowed by the law, the following institutions shall ensure that their documents shall be re-usable for commercial or non-commercial purposes: museum, library, archive, archaeological area, archaeological park, and monumental park.
3. Public undertakings are excluded from RPSI obligations to make their documents re-usable for commercial or non-commercial purposes.

7.3.3.2 Requirements specification

We apply the EARS framework to the foregoing prescription in order to implement a policy with which $VM_{FirstLife}$ can identify the institutions from which it can harvest data without infringing copyright.

1. **Ubiquitous requirement**: The system shall verify that the type of institution from which data is being harvested is:
   (a) An administrative body of the State in Italy
   (b) An administrative body of a region of Italy
   (c) An administrative body of the autonomous province of Trento and Bolzano
   (d) A local authority in Italy
   (e) A union of a local authority in Italy
   (f) A consortium of a local authority in Italy
   (g) A non-economic entity of a local authority in Italy
   (h) A non-profit organization financed by the State or region or local authority in Italy
   (i) An non-profit organization governed by public law
   (j) An non-profit organization managed or supervised by an administrative body of the State, region or local authority in Italy
   (k) An organization with more than half of the members of its administrative, managerial or supervisory board appointed by an administrative body of the State or region or local authority in Italy
   (l) A museum
   (m) A library, including university library
   (n) An archive
   (o) An archaeological area, an archeological park or a monumental park.
2. **Unwanted behavior:** IF the type of institution is as follows, THEN the system

shall request for a license to re-use the information in question:

- An organization entrusted with the operation of services of general economic interest of an industrial or commercial character i.e. a public undertaking;
- A museum, library or archive, where re-use is not for historical purposes;

3. **Optional Feature**: WHERE the system is required to apply for a license for RPSI, the system shall request re-use using the form in Figure 7.9.

Request to re-use information produced or held by [NAME OF PUBLIC SECTOR BODY]	
Title: Miss/Mrs/Ms/Mr	
Name	
Organisation (if applicable)	
Address	
Postcode	
Telephone	
Email	
Indicate what information you wish to re-use (provide as much detail as possible)	
Please indicate how you wish to re-use the information (for example, on an intranet site, to copy for in-house training papers, for commercial publication)	
If you are planning to publish the information, please provide details such as publication title, website address, name of publisher.	

Figure 7.9: The PSI request form (Courtesy of The National Archives, UK).

7.3.3.3 Compliance pattern generation

Context: Firstlife has a competence i.e. geo-referenced web platform technology that enables it to re-use PSI for commercial purposes to coordinate urban institutions.

Problem: FirstLife has data collection algorithms that can re-use restricted information without requesting for such re-use thereby infringing copyright e.g. RPSI from a

private museum.

Solution:

1. *An ubiquitous requirement*: delineating 15 types of institutions from which $VM_{FirstLife}$ can harvest data without a license.
2. *An unwanted behaviors requirement*: identifying two instances where $VM_{FirstLife}$ is obliged to apply for a license to re-use the subject information; and
3. *An optional feature*: a standardized form that $VM_{FirstLife}$ can use where it is required to apply for a re-use license.

7.3.3.4 Legal risk management

We manage FirstLife's risks by adding further activities to the strategy map as depicted in Figure 7.10. These are activities to verify the type of institution and request for RPSI licenses where necessary. Corresponding activities and competencies have been added to the value model on the VDMBee platform and the implementation can be examined at FirstLife Value Model.

7.4 Conclusion

This chapter set to evaluate the CPF by exploring the regulatory conversation of two startups. We first set out a case study protocol as a foundation for the case studies. The first startup BitPesa presented a gap-filling scenario envisioned in the literature review in subsection 2.4.5. This required going beyond legal interpretation to fill the extrinsic gap in the legislation. The second startup, FirstLIfe presented a scenario for data management that required an interpretation of the legal institutions from which its system could collect data. The legal argumentation was less about confrontation and more about defining the scope of institutions from which data could be collected without risking copyright infringement. This will prove invaluable in an age where

governments are under pressure to tighten their data protection regimes and copyright infringement while allowing for startups and SMEs to exploit PSI.

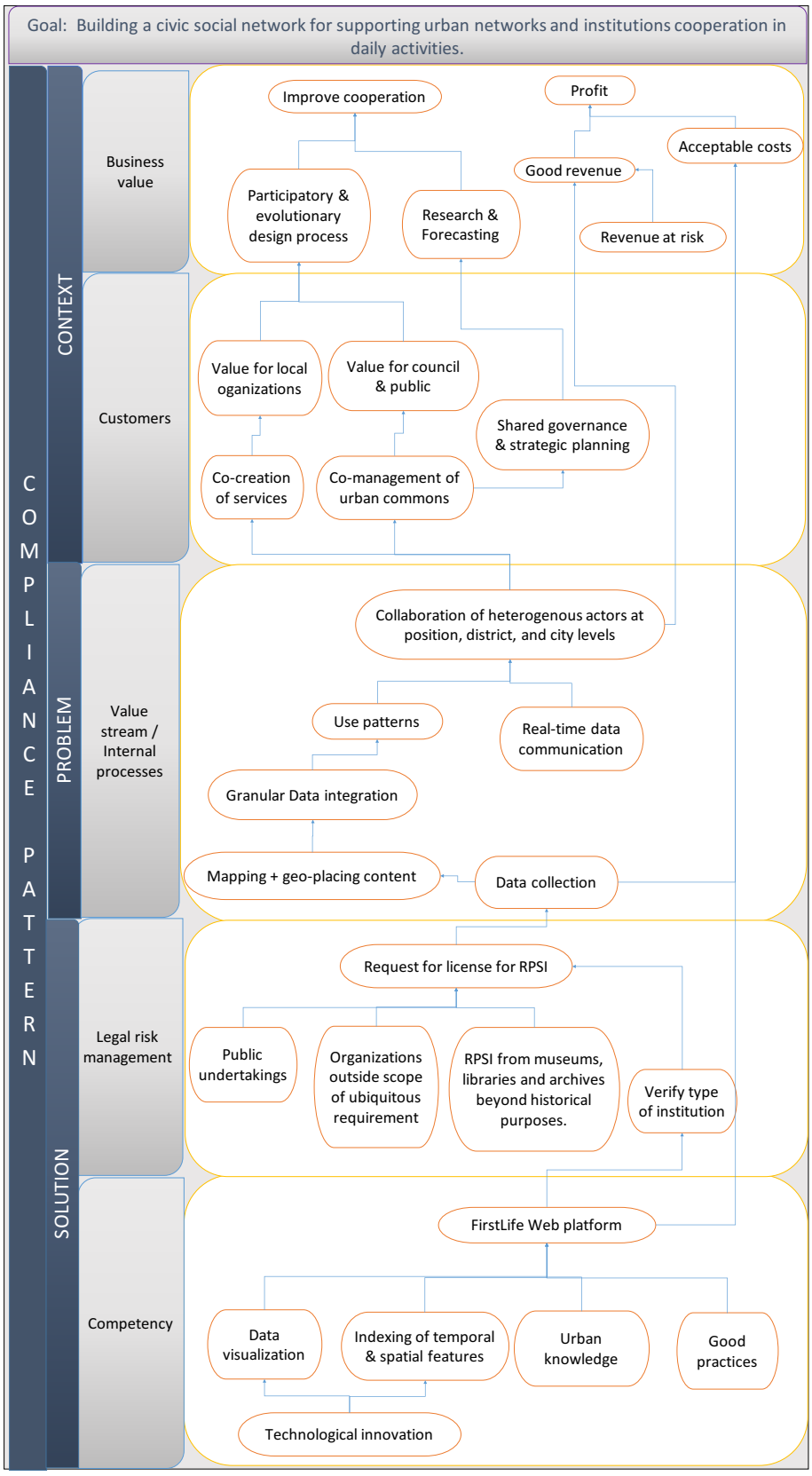

Figure 7.10: FirstLife's strategy map with risk management.

Chapter 8

Conclusions

This thesis investigates how to make the law more accessible for legal risk management in order to help firms manage their regulatory conversations. This chapter summarizes the contributions in this regard in section 8.1 and considers future work in section 8.2.

8.1 Contributions

This thesis introduces a compliance patterns framework CPF to help firms manage the complexity involved in interpreting legal provisions. The framework endeavors to reduce the complexity involved in interpreting legal provisions. Steps have been outlined on how to model the business context, isolate the legal risk and formulate an appropriate solution. Once the business context is modeled, using value modeling, abstract argumentation schemes are used to ensure (1) the relevant legal rules are identified (2) any ambiguities are resolved, and (3) the resulting outcome is applied. The result can be summarized in a compliance pattern, following a *context-problem-solution* format. The Compliance Patterns Framework covers the following sub-contributions:

1. a meta-model formalizing concepts of the framework;
2. implementation of the meta-model to derive compliance patterns;
3. definition of a methodology for legal risk analysis using value models;
4. mapping multiple interpretations to business processes; and
5. extension of Eunomos with a module for interpretation.

In particular response to the research questions in section 1.4.1:

1. RQ1: To minimize legal costs for startups, chapter 2 reviews the relevant literature and proposes a comprehensive approach that applies interdisciplinary aspects from business modeling, legal interpretation, informal logic and RE. We have determined value modeling to be a suitable method for exploring a startup's legal risks by focusing on a value model's competencies and activities. To develop business models that achieve their value while minimizing legal risks, we were able to remodel legal risk as value-at-risk using VDMBee, thereby expressing its impact on the business model in monetary terms.
2. RQ2: In order to understand the uncertainty that startups face, we first conducted preliminary case studies in chapter 3 of two court cases litigated at SCOTUS and CJEU. Here, we were able to extract the steps for a legal risk analysis based on the steps followed by the courts in discussing the cases. We also observed the active role that canons from section 2.4 had in determining the outcomes of the cases, even though they were not explicitly declared. To determine legal requirements for disruptive technology, the survey in chapter 4 showed that we need to develop an agile compliance formulation method that delivers actionable prescriptions and specific requirements. We therefore began by applying the VDMBee methodology in chapter 5 to discover and prototype business models for the Aereo and TVC cases. Consequently, we applied argument schemes in section 5.3 to develop templates of the canons in order to apply them in the risk analysis process. Similarly, we apply argument schemes to characterize the legal

risk analysis process in chapter 6. This helps to position the value model in the relevant legal domain where the relevant issues are determined and interpreted. A model for legal argumentation is incorporated in this process to reconcile and determine the prevailing interpretations. Suitable prescriptions are then derived and clarified using the EARS framework to derive compliance patterns applicable to the value model.

3. RQ3: We redesign the strategy map by introducing a legal risk management perspective that helps us to map the compliance patterns onto their respective business processes. To transition from high-risk to low-risk models, we model two phases of the value model on the VDMBee platform showing the As-Is (current) phase, and the To-Be (compliant) phase. The activities managing the legal risk are added to the To-Be phase of the model. This also helps to mitigate the value-at-risk accordingly.

The compliance patterns are designed to clarify the necessary conditions for compliance in a way that is accessible to system engineers, business executives, business analysts and other stakeholders. This aims to help them make informed decisions about the way to deal with legal risks. Should they revise the business model in accordance with the compliance pattern to mitigate the legal risk, or should they accept the risk and absorb the costs of non-compliance?

We test the CPF with two case studies in chapter 7 involving two startups BitPesa and Firstlife. The case of BitPesa showed the need for a flexible approach to fill gaps in scenarios where the regulatory framework was non-existent and uncertain. We were able to develop a compliance pattern based on other jurisdictions that are already regulating virtual currencies. The case of FirstLife highlighted the need for an agile approach to manage their data collection algorithms. A further study is illustrated in our paper Muthuri et al. [2017] where the TVC legal dispute in the area of copyright law is illustrated. These cases show that the CPF is expressive enough to capture the

essence of the legal debate, and yet can be summarized in a compliance pattern. In particular the choice of using value modeling (VDML) to represent a business model, in order to represent the legal context and problem of a dispute, turns out to be fruitful. Value modeling can be linked to the Business Model Canvas, which is accessible and usable by the target audience of entrepreneurs. It is precise enough to capture legal choices, while avoiding the operational details of a business process model in a notation like BPMN. From an RE perspective, this work improves on the requirements elicitation process by elaborating on what may be entailed in the interpretive process.

8.1.1 Upgrading Eunomos

Compliance patterns could further enhance search capabilities in Eunomos to help executives explore the legislation given a business model. In case of changes in the law, compliance officers can find and update prescriptions affecting business models. Diagnosis will also improve as executives will be enabled to find potential legal risks and assess their relative impact using a value management platform such as VDMBee. Most importantly, the compliance patterns distill legal advice into unambiguous system requirements to help manage outstanding risks. In some cases, the patterns will have alternatives for stakeholders to choose from.

8.2 Future work

A successful representation of the ontological and conceptual modelling of the intepretive process sets the stage for formalization. Governatori [2005] applies ruleML, defeasible and deontic logics to transform a contract from an implicit to an explicit form so that a rule engine can monitor its performance at run time. Similarly, our approach can be incorporated as a module to derive possible interpretations in developing frameworks for a) legal reasoning e.g. Rotolo et al. [2015], b) the management of legal knowledge

e.g. Eunomos Boella et al. [2016] or c) for the acquisition and specification of legal requirements in RE e.g. Nomos 3 Ingolfo et al. [2014], Legal-URN Ghanavati et al. [2014] and FBRAM Breaux [2009].

Future work will focus on the formalization and streamlining of the argument schemes and the compliance pattern generation process. Additionally, more work is needed on a general method for quantification of legal risk, possibly in conjunction with either statistical or rule-based NLP methods (cf. Boella et al. [2013a] and Robaldo et al. [2011]). So far we have only explored one model of reconciling interpretive arguments. How this model can interface with alternative models such as Araszkiewicz [2013] needs to be investigated.

Appendix A

Appendices

A.1 Survey conducted on how startups manage legal risks

University of Luxembourg

How do startups deal with legal risks?

Dear participant,

This study is part of doctoral research into the decision making processes of startups regarding legal uncertainties. We expect that startups have little knowledge of the legal aspects of their novel business models. Consider for instance: regulation of technology; securing your assets; IPR; data protection; contract enforcement, labour law and many other legal aspects. The study will help us to establish whether there is a need to develop a legal knowledge management system to help determine the legal risks and possible solutions in order to be compliant.

Kindly illustrate with examples where possible. If you have any questions or comments, do not hesitate to get in touch on +393283350939 or muthuri.r@gmail.com

What is name of your startup ?

Profile:

What is your position in the firm?	
How many years have you been in the startup industry?	
Where is your startup based?	
In what sector do you categorise your startup?	
How many years has your startup been in operation?	
Is there a designated legal officer within the company, or an external legal expert you consult?	

Business Model

How does your company (intend to) make money? Have you finalized decisions about this business model, or is it still open?

Have you identified the laws or regulations that may affect this business model?

- ○ Yes
- ○ No

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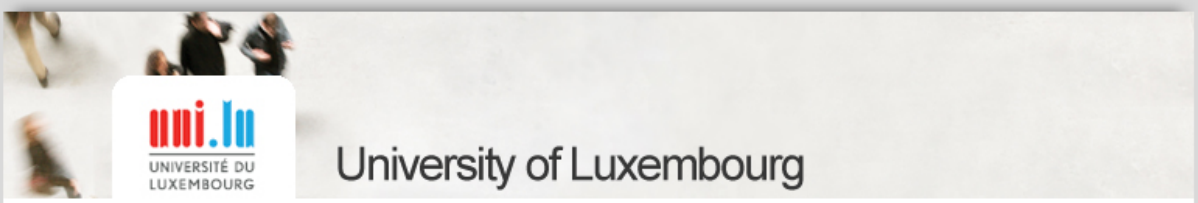

What are the difficulties associated with this such laws or regulations?

What are the main legal risks with regard to your startup's business model?
(We're focusing on the legal risks related to the business model as opposed to others e.g. of setting up a business etc which are common to all)

Do you consider these risks when you are designing/changing your business model?

- Yes
- No

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University of Luxembourg

Were you able to determine the possible ways your business model could have been affected?

Were you able to propose appropriate modifications of the business model to solve this?

Did you work with an internal or external legal expert or lawyer in this process?

What makes legal compliance challenging for you?

What are the most important (or critical) aspects of making sure that your business model is legally compliant (hereafter "compliance decision")?

To what extent do you agree with the following statements when applied to compliance decisions at the early-stage entrepreneurship?

	strongly agree	somewhat agree	neutral	somewhat disagree	Strongly Disagree
The law is clear as regards our business model.	◉	○	○	○	○
It is easy to determine which legislation is applicable.	○	○	○	○	○
We have taken a crucial decision about the business model without knowing exactly what the law is.	○	○	○	○	○
Compliance related decisions are often refined at a later stage.	○	○	○	○	○
When we make a compliance decision, it is final.	○	○	○	○	○
Time constraints do not allow us to consider all decision alternatives.	○	○	○	○	○
We prefer discussions with lawyers (or other stakeholders) to base our compliance decisions on.	○	○	○	○	○
It is easy to interpret what rules the legislation provides and how they affect our business model.	○	○	○	○	○
We prefer to base our compliance decisions on other business related data.	○	○	○	○	○
Compliance decisions often have to be reconsidered, which also affects other decisions.	○	○	○	○	○

Can we get back to you in regard to testing the Legal Knowledge Management System developed with the help of this questionnaire?

- ○ Yes
- ○ No

Please indicate your email bellow.

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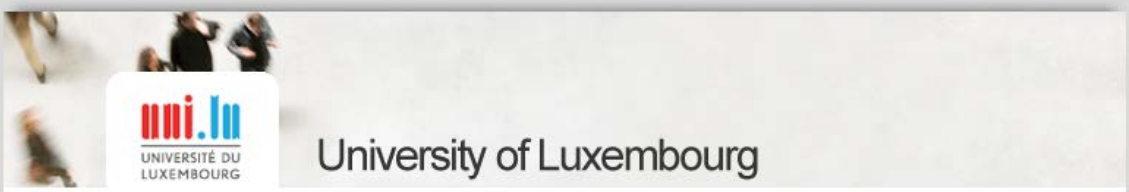

We thank you for your time spent taking this survey.
Your response has been recorded.

A.2 Public notice on virtual currencies by The Central Bank of Kenya

PUBLIC NOTICE

CAUTION TO THE PUBLIC ON VIRTUAL CURRENCIES SUCH AS BITCOIN

The attention of the Central Bank of Kenya (CBK) has been drawn to media reports on the use, holding and trading of virtual currencies such as Bitcoin in Kenya. Bitcoin is a form of un-regulated digital currency that is not issued or guaranteed by any government or central bank. Domestic and international money transfer services in Kenya are regulated by the Central Bank of Kenya Act and other legislation. In this regard, no entity is currently licensed to offer money remittance services and products in Kenya using virtual currency such as Bitcoin.

This is to inform the public that virtual currencies such as Bitcoin are not legal tender in Kenya and therefore no protection exists in the event that the platform that exchanges or holds the virtual currency fails or goes out of business. Some of the risks associated with buying, holding or trading virtual currencies include the following:

- Transactions in virtual currencies such as bitcoin are largely untraceable and anonymous making them susceptible to abuse by criminals in money laundering and financing of terrorism.
- Virtual currencies are traded in exchange platforms that tend to be unregulated all over the world. Consumers may therefore lose their money without having any legal redress in the event these exchanges collapse or close business.
- There is no underlying or backing of assets and the value of virtual currencies is speculative in nature. This may result in high volatility in value of virtual currencies thus exposing users to potential losses.

CBK reiterates that Bitcoin and similar products are not legal tender nor are they regulated in Kenya. The public should therefore desist from transacting in Bitcoin and similar products.

CENTRAL BANK OF KENYA
DECEMBER 2015

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