Value-based models for ontology-driven, legal risk management and compliance

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Abstract. In this paper, we motivate how value-based modelling could be utilised for an integrated perspective to compliance design. Using value models for startups, it is possible to apply a methodology to determine the applicable legal provisions which are then customised to fit the value model using legal interpretation and argumentation. The result is a compliance pattern which helps determine the impact of the applicable provision on the business process being considered.

Keywords: ontologies, startups, value models

1 Introduction

1.1 Motivation

Technological innovation has deepened the specialisation in certain fields such as medicine, business and architecture leading to specialised domains in this areas. However, existing legal frameworks are not sufficient to regulate innovations in specialised domains. This is because innovation in specialized domains occurs at a faster pace than that of legislative enactments and legal doctrine in this areas. Legislative and judicial processes are slow and deliberative processes in nature which results in minimal enactments or update of existing legislation particularly in specialized domains. This may lead to gaps in the legal frameworks that regulate innovations in specialised domains.

1.2 Goals/Objectives

From the foregoing, our main research objective is to make the law more accessible in specific contexts of usage particularly for non-experts. Our context for this research will be the startup domain. Startups embody disruptive technologies i.e. new, innovative technologies that periodically emerge and fundamentally transform companies, industries and markets. They therefore embody the nature of specialisation motivated above. Accordingly, the specific objective is to make the law more accessible for regulatory risk management and compliance for the startup domain.

To fill the foregoing gaps, we aim to contextualise existing legislation to fit business models in specialised domains. We do so by identifying and interpreting relevant legal
provisions related to the firm’s business model. Here, we make use of legal argumentation to derive suitable prescriptions that may help define the compliance of the business model. We then appropriate such prescriptions to develop compliance patterns that may help to adapt the business model to a compliant state.

An early attempt at developing a compliance management framework in this manner using legal ontologies is proposed in Boella et al\cite{Boella:2013c}. Here, a state-of-the-art legal knowledge management system named Eunomos is presented. It has a legal repository and an ontological tool that classifies legal sources into navigable domains of law. Eunomos 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 methodology accommodates the fact that there could be more than one technical solution applied to satisfy a particular legal requirement. However, the extraction of legal prescriptions from Eunomos to check for the compliance of a given system is currently not a methodical process.

2 Literature review

2.1 Legal interpretation

Compliance is a matter of interpretation that is shaped during a dialogue or a regulatory conversation. Yet startups do not have the resources to engage in such conversations. Another ongoing challenge is how to incorporate varying interpretations that are normally given to the legal provisions\cite{Gutierrez:2013}. This is further complicated by the fact that 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 or complementing each other\cite{Gutierrez:2013}. Given that the body of legal ontologies is continually growing, it would be interesting to see how legal ontologies could be appropriated to represent different interpretations thereby enhancing their relevance.

Interpretations can take many thematic forms\cite{Gutierrez:2013} including linguistic, systemic teleological-evaluative or a trans-categorical perspective. 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 substantitive 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.

2.2 Legal argumentation

We borrow the general model for interaction of interpretative arguments proposed by MacCormack et al. This model exploits the foregoing general distinction of argument types into four broad categories of linguistic, systemic, teleological-evaluative
and trans-categorical. The model is expressed thus: 1) In interpreting a statutory provision, consider the types of argument in the following order: a) Linguistic arguments; b) Systemic arguments; c) Teleological-evaluative arguments. 2) Accept as prima facie justified a clear interpretation at level (a) unless there is some reason to proceed to level (b); where level (b) has for sufficient reason been invoked, accept as prima facie justified a clear interpretation at level (b) unless there is some reason to move to level (c); in the event of proceeding to level (c), accept as justified only the interpretation best supported by the whole range of applicable arguments. 3) Take account of arguments from intention and other trans-categorical arguments (if any) as grounds for the prima facie ordering.

3 Conceptual framework

Our conceptual framework involves three facets; legal risk analysis, legal argumentation, and compliance patterns. To do this we appropriate the legal repository in Eunomos to develop a legal knowledge management system suitable for startups.

3.1 Legal risk analysis

Here the aim is to develop a methodology to facilitate the analysis of a startup's business model while considering the possible interpretations to the relevant legal rules. For each startup, we need to define the new technology it presents. We assume and seek to demonstrate that this is reflected in its value model (VM). We then establish whether that particular class of technology is provided for in the law. If so, we look at whether sufficient legal provisions exist to determine the prescriptive rule (R). If the provisions are not sufficient, we proceed with gap-filling i.e. extending such provisions to include or limiting them to exclude the technology in question. If the class of technology is not provided for in the law, could we declare a gap in the law? If yes, can we safely apply the closing axiom that whatever is not prohibited in law is legally permitted? Whether the resulting answer is positive or negative, the eventual step is to derive the corresponding prescriptive rules. A prescriptive rule raises a legal question (Q) which is fact-driven. Such questions are answered by factual descriptions termed, operative facts (F). It is from the operative fact that we get an expression (E) which could be a word, phrase, or sentence that calls for interpretation.

3.2 Interpretation and Argumentation framework

From the foregoing, it is the interpretation (I) of the identified expression (E) that governs the value model (VM) in question. This expression when interpreted using one of the foregoing canons (C), for instance a technical argument, results in a given interpretation (I). It is this (I) that allows us to rephrase the prescriptive rule (R) as a prescription (P) interpreting (R). Given that there may be need for more than one interpretation applicable to (R), we apply the general model of interaction of interpretative arguments above to derive the required (P).
3.3 Compliance pattern Framework

A compliance pattern is our proposal is for a context-problem-solution structure for identifying and classifying legal risks. The context represents the (VM) while the problem embodies the interpretive process that derives (P). The solution is then characterised by the prescriptive conditions (PC) in (P).

4 Case study

We tested the foregoing conceptual framework in the problem environment by using two media technology startups. The first Aereo was based in New York City and was trying to disrupt the $167 billion American television market. The second, TVCatchup compliments the study with a European perspective. Owing to space limitations, we only give the Aereo example. Aereo’s technology enabled subscribers to view live and time-shifted streams of over-the-air television on Internet-connected devices. Aereo was sued in the US Supreme Court case, American Broadcasting Companies v. Aereo.1 The Supreme Court rejected Appeal decision 6-3, to hold that Aereo’s retransmission of television broadcasts was a “public performance” of the networks’ copyrighted work.

We developed a value model for Aereo and used it to derive a compliance pattern as shown in the table below. We used both VDML and e3value to develop Aereo’s VM. It is possible to see the loss of value between the broadcasters and the Aereo. This is not easily visible in the VDML version.

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1 573 U.S. (2014)
5 References


