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Abstract

The mutual influence of Information Systems (IS) and law can be observed in projects of various industry sectors, but it seems to be prevalent in e-Government projects. Existing IS research in the field of e-Government suggests that the relationship between these two worlds has high potential for conflict and can be crucial for a project's success. But an in-depth analysis of this specific relationship is still missing. We observed the German e-Government project 'online car registration' with a case study research approach. During the case analysis we developed a framework for the description and classification of the relationship of IS and law. The frameworks dimensions are the perceived influence direction (IS $\rightarrow$ Law, Law $\rightarrow$ IS, IS $\leftrightarrow$ Law), the perceived influence character (Positive, Negative, Ambivalent) and the perceived influence impact (Restrictive, Demanding, Enabling). We use this framework to structure the case and to derive project management recommendations on how to manage the relationship of IS and law in e-Government projects. The framework can further be used as a basis for a more in-depth systematic literature analysis or empirical case analyses.

Keywords: Legal, Law, IS, Relationship, Framework, Case study, e-Government

1   Introduction

E-Government projects are strongly confronted with a legal influence. Administration processes are in most cases regulated by law and legal regulations. Often, changes of the law are fundamental for process redesign activities. Although this influence can be observed in particular for the public administration sector, it is not restricted to it. Other sectors like financial services are also confronted with an increasing number of regulations and directives (e.g., Bergeron 2004).

The relationship of Information Systems (IS) and law is bi-directional. On the one hand, new technological inventions increase innovation pressure on law and force it to react. The German debate about Google street view and its consequences for citizen's privacy (Cosgrove 2011) is one prominent example. Privacy protection lawyers became active and forced Google to allow householders to constrain the publishing of house photos. All in all, the virtualization and digitalization of our world calls for changes in law, where out-dated phrasing or concepts cannot be applied anymore to the real world situation. On the other hand, we see that legal regulations can influence the development and application of information systems. E-Government systems explicitly develop and implement features like, e.g., digital signatures or transaction logs in order to be compliant with relevant legal regulations. Copyright law and data privacy law, e.g., have to be considered when developing and operating social media IS solutions.

A first impression might lead to the supposition that both disciplines constrain each other. From an information systems perspective, law is constraining innovation and inventions. From a legal perspective, law tries to preserve existing regulations and established behaviour. Therefore, at first glance both perspectives appear antithetic. Going into detail should offer a more sophisticated view. The relationship of IS and law in e-Government initiatives is multi-layered and complex. Processes and structures in public administrations are founded in laws, policies or directives (Janssen and Cresswell 2005). The relationship of the two disciplines IS and law, therefore, becomes a relevant research object in e-Government projects. However, little IS research has been conducted on this specific relationship in e-Government projects, so far. Often, only certain aspects of this relationship are described or just approached from a single direction.

Therefore, this paper has two goals. First, we aim to investigate the relationship of IS and law. We conceptualize this relationship by developing a framework of dimensions that can be used to structure and describe the different types of influence that law and IS can have on each other. Second, our work aims to provide guidelines for a better consideration of legal requirements in e-Government projects.

To reflect the current view of IS research on the relationship of IS and law, we investigate related work in e-Government research and examine how the relationship of IS and law is currently considered from this perspective (Section 2). We then describe our research process (Section 3) including the selection criteria of the case (Section 3.1) and the case analysis process (Section 3.2). Then, we present the results (Section 4), which are a conceptual framework to structure and explicate the relationship of IS and law (Section 4.1), the structuring of the case using the framework (Section 4.2) and guidelines for the management of e-Government projects regarding the integration of the IS and legal perspectives (Section 4.3). A conclusion and outlook complete the article (Section 5).

2   Related Work

Some research papers address e-Government projects from a challenge or success factor perspective. A stage model for the development of e-Government from Layne and Lee (2001) describes four stages on the way to fully functional e-Government. For each stage, the types of functionality and the related challenges are described. It is stated that certain procedures like, e.g., 'ensuring the privacy of the citizen requesting the service' (Layne and Lee 2001, p. 132) are challenges that have to be met by implementing according regulations. However, the model does not describe the relationship of IS and

law in more detail, e.g., how these regulations should be created or what challenges the different actors of IS and law in e-Government projects face in the different stages.

Brewer et al. (2006) see a challenge for the design of e-Government systems regarding the active involvement of politicians and decision makers. They state a need for government-wide policy guidelines regarding new information technologies to 'insure that these technologies are smoothly integrated into the existing administrative and political superstructure' (Brewer et al. 2006, p. 483). But at the same time, they notice a lack of respect between technical specialists and public administrators. Brewer et al. (2006) perceive the collaboration between actors of the disciplines IS and law as conflict laden from an actor's perspective but as necessary for the integration of new technologies in public administrations.

Al-Busaidy and El-Haddadeh (2011) recognize the support for regulatory and legal issues at all levels of government to achieve public sector transformation as an important success factor for e-Government initiatives. The need for 'new rules, procedures, arrangements and actions, which are required to develop a successful e-Government system' (Al-Busaidy and El-Haddadeh 2011, p. 5) is stated. In the Oman-Case described in this paper a 'requirement to provide an integrated system of laws and regulations' in order to handle the manifold opportunities and problems that result from new technologies is observed.

Gil-García and Pardo (2005) describe the challenge of the optimal integration of laws and legal factors in e-Government initiatives. According to their findings, 'restrictive laws and regulations developed prior to or in ignorance of technologies relevant to e-Government can affect the success of projects' (Gil-García and Pardo 2005, p. 195). They propose investments into 'changes to the regulatory environment that allow for or enable adoption of emerging technologies'. Law is seen as a restrictive component that has to be altered in order to facilitate e-Government projects. E.g., one-year budget cycles contradict long-term IT initiatives.

In an analysis of four e-Government case studies, Winkler et al. (2011) also found legal regulations to be barriers and restrictions to the projects. They recognize 'data security, laws, as well as different legal standards between authorities and federal states' (Winkler et al. 2011, p. 7) to be important. But they also state that these restrictions can be overcome by appropriate regulatory changes.

Legal regulations are often seen as negotiable barriers (Henningsson and Van Veenstra 2010). Legal certainty is often preferred to potential but risky improvements in public organizations. Therefore, regulations are often perceived as burdensome. But in the case described by Henningsson & Van Veenstra (2010) the burden turned out to be not as restrictive as expected. This was due to a new law that 'in general terms allowed for radical redesign solutions' (Henningsson and Van Veenstra 2010, p. 9). It gave the project the necessary freedom on how to implement specific procedures while at the same time provided a certain degree of legal certainty. This shows that the relationship of IS and law cannot only be described in negative or restrictive terms but should rather be described more differentiated.

Also a more differentiated view is provided by Scholl (2005). He describes a delaying impact of legal, statutory, and regulatory requirements on e-Government business process change projects due to complex approval and consensus procedures. But at the same time much less staggering failure rates of e-Government projects in comparison to private-sector projects are noted. It is proposed that private-sector projects could even learn from public-sector projects in this regard.

It is shown that there are different ways of how to look on the relationship between IS and law. Laws and legal regulations can be conceived as restrictions or barriers that slow down IT innovation in e-Government projects or even forestall it. They can be conceived as challenges when they challenge the design and development of IS and organizational structures. Law itself is often altered and modified during e-Government projects in order to fulfill the project's special requirements. In this case, it can be an enabling factor to a project's success. These multifaceted viewpoints and aspects of the relationship of IS and law indicate that it would help future e-Government initiatives to learn more

about the possible types of relationships that can occur in such projects. Furthermore it would help to learn how the different actors perceive and react to certain situations and aspects coming from the law-side or from the IS-side.

3 Research Method

3.1 Case Selection

The main objective of our research is to get deeper insight into the mutual influence of IS and law. In order to approach this objective we chose a case study research setting and examined an e-Government case. We analysed the case exploratory and, thereby, derived the dimensions of a framework for the relationship between IS and law.

The case selection was one of the most challenging parts when planning the research method. We first established selection criteria from the literature. Miles and Hubermann (1994) suggest five questions in order to test the selected case. We used these questions and defined the following case criteria:

- *Relevance*: Interactions between IS and legal actors must be of high relevance to the case project's success.
- *Appearance of phenomenon*: The case must provide a scenario, which contains information systems planning and development as well as the consideration of legal regulations.
- *Generalisability*: Searching for a case is determined by the criterion of non-extremism. No extreme situations should be selected in order to ensure the generalisability of the case findings.
- *Feasibility*: It must be assured that all required information like, e.g., competent interview partners are available.
- *Ethical*: No investigated result should lead to ethical considerations like, e.g., disadvantages for interview partners.

After preparing the case criteria we searched for a suitable case setting, which fulfils these requirements. We chose the case of the German online car registration project. In 2009 the German e-Government coordination and planning council announced the initiative 'car online' (ger: 'KFZ-Wesen'), which has the main goal to simplify and virtualize the car registration process. The initiative belongs to the e-Government initiative 'Gemany Online' of the German federal state. In our case study we investigate the planning and implementation of the project under the overall control of the federal city state of Hamburg acting as representative for the German federal government. Due to long idle times on the one hand and high execution rates (about 20 million executions per year) on the other hand, high positive effects were expected by the government. Currently the car registration process is characterized by well-established procedures that are well known by citizens, economy and governmental institutions. The complex process is distinguished into three variants: car registration, car deregistration, and car registration change. Originally, the procedure to register a car began with a personal presence of the applicant at the governmental agency for car registrations. The applicant applied for the car registration and the application documents were preliminary checked. An applicant may have chosen a licence plate number and walked to a nearby plate constructer who prepared the plate. The process continued only if first the car registration document was available, second the person could be identified correctly, third the documents about the general inspection of the car were available, and fourth a valid car insurance number could be provided. After gathering all information and documents the main validation process began, which included formality checks and a check regarding open debts to the government like non-payed tax. In a next step the applicants payed the registration fee and allowed the administration to collect the motor vehicle tax. Finally the plates got an official seal and had to be attached to the car.

The goal of the initiative is that the whole process in all three variants should be executable online without any visits to governmental car administration offices. Besides the obvious benefits for citizens, the initiative also aims to increase the efficiency of internal administration processes, which should reduce costs. Stepwise the internal processes should be analysed regarding its potential to

reduce costs and eliminate media breaks in order to achieve integrated online processes for all involved administration institutions. For this purpose a special data exchange standard should be developed that enables standardized data exchange across administration borders.

The case shows in detail how project members with the perspectives of IS and law work together and how these two perspectives influence each other. The original plan of the initiative does not explicitly state changes in law. A deeper insight into the project and its challenges shows that law and changing law play important roles in the project.

The case we selected fits the criteria for our case selection. First, e-Government initiatives and projects are supposed to be a good source to answer our research question because a lot of interactions between actors from IS and actors from law exist and e-Government information systems are often highly regulated by law. Second, it can be expected that we can observe the relationship of IS and law because of the important role of legal participation in the project. Third, a high generalisation potential is given, because the case represents a whole bunch of e-Government cases. Beside the online car registration, four other big management projects are currently processed by the initiative 'Germany online' (infrastructure, civil registration, registry office, national weapon registration). Fourth, a close relationship to the project management existed, which assured well informed interview partners and access to all relevant information. In addition, most e-Government projects provide information that is freely available which brings us to the fifth point. We took great care that the privacy and anonymity of the involved project members stays protected. We further obtained the approval of our interview partner for publishing the results of the case analysis. Other than this, we encountered no further ethical issues.

3.2   Case Analysis

Our research question couldn't simply build up on existing theories (except, maybe, the general mutual influence of IS and law, stated, e.g., indirectly by Luhmann's Social System Theory (Luhmann 1995)). Therefore we decided to conduct an exploratory study. The exploratory character led to the decision to begin with a single case design to get first insights into the phenomenon. To receive data for the analysis and to develop the framework that describes the relationship of IS and law we followed an iterative and incremental four step approach (Figure 1).
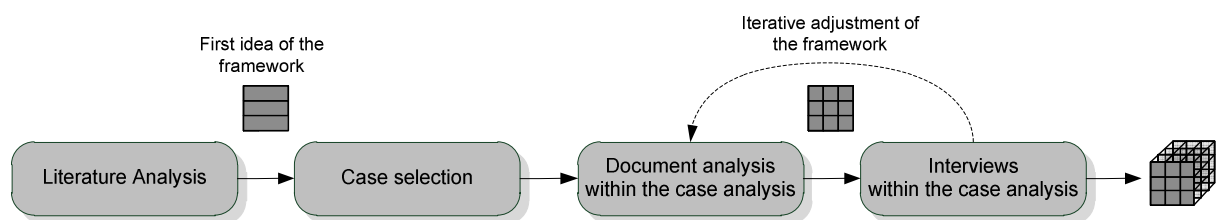

Figure 1: Framework development process

First, we analysed the relationship of IS and law in existing IS literature (cf. Section 2). After that analysis we got a first idea of how to describe the relationship of IS and law. In a second step we chose the case using the principles as stated above. In the third step we analysed the case using documents about the case that were publicly available to refine and revise the frameworks dimensions. A special focus lay, thereby, on the article from Heller & Richter (2010). In order to confirm our assumptions and deepen our understanding of the case we conducted in a fourth step several interviews with the deputy project leader. Voss et al. (2002) suggest that if a bunch of considerable questions can be answered by one single person, the research process should focus on this 'key informant'. In our case, the deputy project leader fits this requirement because he has deep knowledge about the whole project and his profession is in both informatics and law.

4 Results

4.1 Framework

The framework to describe the relationship of IS and law resulting from our research process consists of three dimensions, namely perceived influence direction, perceived influence character, and perceived influence impact (Figure 2). In the following the terms 'IS' and 'law' do not refer to the institutions a project member belongs to. It is rather a description of the perspectives the project members can take. An IS or law perspective might be taken by every project member, regardless whether they belong to IS-related institutions (e.g., IT consulting agencies), legal institutions (e.g., ministries) or public administrations. All dimensions are related to each other and classify different aspects of the relationship of IS and law.
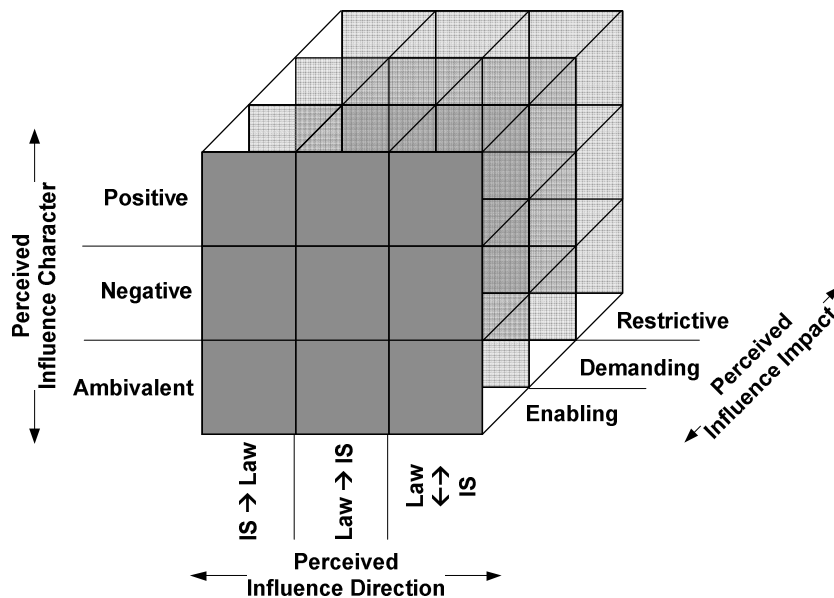
Figure 2: Framework for the relationship of IS and law

The first dimension is the *perceived influence direction*. In many projects existing law or new laws are perceived, e.g., by the project's members as given in terms of obligations to fulfil. We define this influence direction as 'Law influences IS' (*Law → IS*). From the perspective of law, we see an IS influence when, e.g., IS innovation forces the actors from the legal system to react (*IS → Law*). Important at this point is, that the situation is perceived by the project's actors as given. A mutual influence of IS and law (*Law ←→ IS*) can be observed when the influence is not perceived as unchangeable and the actors on law and IS side have the chance to interact and influence each other's decisions and actions. This characterization can be applied for instance when legal and IS experts work together to come to a decision. In the case of Google Street View, e.g., this could have led to a more aligned solution where personality rights would have been integrated in the solution right from the start.

The dimension perceived influence direction provides an indication for the basic perception of the relationship between IS and law in a certain situation. It does not provide insights into the evaluative perceptions legal and IS actors have of particular situations. Therefore the *perceived influence character* dimension describes three different characteristics. A relationship is characterized as *positive* when a regulation or innovative technology development is assessed as beneficial by an individual or a certain group of actors. We focus on the perception of certain groups or individuals and not on whether an influence really has a positive effect because total effects are hard to characterize. Perceptions of individuals can be determined. The perception of a group in the following describes a homogenous perception within the group. A *negative* influence character is defined as a situation, in

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which an actor perceives a legal or IS impact as impairment. Coming back to the Google Street View example clarifies a negative influence character. Because courts and legislation suddenly have to deal with a situation, which was formerly not defined, legal actors may feel overwhelmed by the technical innovation and adopt a position of innovation resistance. Legal requirements might also be perceived as negative by IS actors because they restrict and constrain IS innovations. Lastly, we call the perception of a situation *ambivalent*, in which actors or groups of actors perceive a situation positive and negative.

The relationship of IS and law is related to a certain *perceived influence impact*, which is our suggestion for the third dimension. We characterize the perceived impact of a situation as restrictive, enabling, or demanding. A *restrictive* impact perception appears in situations, in which the actors in the project feel restricted or constrained. The actor's original goals cannot be fulfilled in the way they were planed. The *enabling* influence will be used to describe situations, in which a certain influence is perceived as an enabler for innovative or new implementations or application that haven't been possible before. New technologies, e.g., might be perceived as an enabler for implementing new laws and new laws might be perceived an enabler for implementing new technologies. Further, we call a perceived relationship impact *demanding* when a certain situation demands the actor's of the project to react. The Google Street View example again provides a deeper understanding of that term. From a legal perspective technological innovation, such as Google Street View, demands new regulations for data privacy or at least appropriate jurisdiction. Considering the influence direction Law → IS, from a Google perspective, legal requirements might be perceived as a demand to implement an addition to the system that allows citizens to opt-out of the service, which finally results in blurred houses in Google Street View (Farivar 2011).

4.2   Case-Based Analysis of the Relationship of IS and Law

In the following we describe the case of the online car registration project in Germany using the framework that resulted from our research process. We split the whole project case into small project situations where arguments from the IS perspective and the legal perspective were exchanged. In order to describe the relationship of IS and law these particular situations will be briefly sketched and coded with the three dimensions of the framework. We begin with the description of situations, in which IS is perceived as influential for law, continue with situations, in which law is perceived as influential for IS and conclude with situations, in which a mutual influence of IS and law is perceived.

IS influences law

A demanding situation came up when actors from the legal perspective in the project had to consider certain legal concepts like responsibility, application, verification, admission, and other terms. These terms are basic to German car admission law but they have to be interpreted in new ways when thinking about online registration processes. The concept of a web portal, e.g., where all car registration services are pooled was perceived as a threat for existing concepts of legal responsibility. The question of who is responsible for what in a web portal solution challenged legal experts from federal governmental departments, who perceived this situation as *negative* because of the effort they had to reappraise the respective concepts. In the project it was spoken of 'organized incompetence'. In effect the impact of IS (in terms of an online information system) on law in this situation was perceived as a *demand* for action by the legal actors in the project.

In the online car registration project 'the collaboration beyond administration borders has to be ruled' (Heller and Richter 2010, p. 347). This is necessary because of the federal state system in Germany. This demand resulted among other things from the opportunities that new technologies offered in the context of e-Government. The existing flexibility of public administrations was not sufficient for the application of innovative IS. The law had to react to this. Thus, legal actors perceived this situation as a *demand* for changing the law. The situation exercised high innovation pressure on law, which is perceived as *negative* by actors with a legal perspective because changes of law often imply to abandon a law's original intent to a certain degree.

The implementations of innovative technologies in e-Government projects are often related with huge investments (like, e.g., the new electronic ID card in Germany). In many cases, these investments are made before the legal situation and the legal consequences are totally clarified. Law is then forced to adapt itself to the new situation, not seldom against all inherent rationalities (Heller and Richter 2010). Large-scale IS innovations are perceived as a *demand* for changes in the law or for the creation of new laws in order to justify investments in technology. Administrative project members perceive this compulsion as a *negative* influence of IS on law.

Law influences IS

One of the most challenging problems in the project is related to the fact that 'long standing and well-established procedures exist, to which administration, economy and citizens are adapted to' (Heller and Richter 2010, p. 345). Current law and administrative statutes are partly responsible for procedures that direct the car registration process in a way that provides little freedom to design optimized processes using information technology. In addition, existing network structures among public administrations as well as regulations for administrative responsibilities challenge the implementation of IS across administrations. 'State, federal and local administration reengineering in general and e-Government in particular are differentiated into a horizontal and vertical administration network' (Heller and Richter 2010, p. 346). On the one hand, these different authorities are independent, have individual needs and are regulated through own laws. On the other hand, they are closely coupled and provide interfaces to interact with each other. The car registration process touches all administration levels, which increases the complexity significantly. Project members perceive this challenge from an IS perspective as a negative legal influence because suitable IS solutions must be approved on all administration levels. To bring all participants and their individual legal restrictions together is a requirement that restricts IS implementation. From an IS perspective the strong regulation is perceived as *negative* because possible benefits of using IS are prevented. Thus, the impact of law in this particular situation is perceived as *restrictive* by IS actors.

Compared to other administrative processes the car registration process provides one particularity, which is the heterogeneous media that is presupposed by law and used in this process 'In most areas the law requires – without mentioning it explicitly – paper and pen and the personal dialog between people as central communication means' (Heller and Richter 2010, p. 350). Many activities require a 'location and time synchronized contact between the applicant and the authority's agent' (Heller and Richter 2010, p. 346). While in many standard administration processes paper and possibly a stamp are central media, the car registration process requires additional special safety documents, a metal number plate and a special permission tag that is made of a particular plastic. This media heterogeneity was challenging for the project members from an IS perspective and was perceived as a restriction of the range of possible IS solutions. Thus, this situation was perceived as *negative* and *restrictive* from an IS perspective.

Law did also have enabling impacts on IS. Since the second German federal reform has been decided, the need for collaboration of administrations is expressed. 'Federal and state governments may collaborate in the planning, development, and operation of information systems which are required for the fulfilment of their tasks' (paragraph 91 c of the German constitution). This paragraph enabled a whole new field of possible IS solutions in e-Government projects and is, therefore, perceived as *positive* and *enabling* from an IS perspective. It further encourages the collaborative development of optimized processes and common standards based for the implementation of information technology.

Law and IS mutually influence each other

During the project, the question of the feasibility of electronic license plates came up. Technical solutions for electronic license plates exist but are still not secure enough for some legal actors, e.g. regarding fire retardancy or being forgery-proof. Future developments may fulfil these requirements. This leads to the question, whether innovative law should also consider such future technical developments. 'The legal framework must be so broad that expectable technological developments can be included without further legislative changes for the realization of e-Government projects' (Heller

and Richter 2010, p. 348). In order to reach that goal, both legal and IS actors have to collaborate and have to adopt each other's perspective, which is a strong indication for a mutual influence of IS and law. The development and legal regulation of innovative IT like the electronic license plates is, therefore, perceived as a *demanding* situation by both perspectives in the project. At the same time this situation's character is perceived *ambivalent*. Law that is sufficiently abstract to cover technological innovations loses at the same time some of its power of control. This is perceived rather negative from a legal perspective. From an IS perspective this enables IT innovation but also provides a certain degree of legal uncertainty because abstract law still has to be interpreted at court.

Another mutual influence of IS and law is related to the integration of the German electronic ID card. The car online initiative adopted the idea to identify applicants online by using the electronic ID card. On the one hand, the innovative way of identification must be covered by law, which requires legal changes and the effort to prepare these changes. On the other hand, the situation is perceived as enabling from an IS perspective because IS experts are allowed to think innovative in order to find a solution for the electronic ID card's technical implementation. Therefore, a collaborative extension of the relevant law in order to allow and regulate the usage of the electronic ID card is perceived as *ambivalent* and *enabling* from the IS and law perspective.

Collaboration of project members from IS and legal perspectives required an effective and efficient communication, which was a real challenge during the project because IS experts and legal experts basically communicate in two different languages. Specific instruments from the young field of legal visualization have been used in the project to tackle this problem by providing suitable communication means for IS and law. They supported the connectivity of rather text-based legal work and process modelling approaches from IS (Heller and Richter 2010). Both perspectives had to contribute to this development, so we observe a bidirectional influence. Common communication means are perceived as positive and *enabling* for the collaboration of IS and law. But at the same time legal actors had reservations about the legal validity of such visual representation forms. Graphical models were perceived as negative by some legal actors in the project. Therefore, the perceived influence character is described as *ambivalent*.

'Decision competencies about IT, organisation, and law of the online car registration were centralized for the pilot stage – against common practice in the car registration' (Heller and Richter 2010). Centralized decision processes allowed integrated and aligned decisions and solutions regarding IT as well as legal regulations. Actors from both perspectives influenced each other and collaborated in the decision making process. This is generally perceived as positive and *enabling* by both perspectives in the project because it leads to better aligned decisions and, therefore, creates mutual benefit. But some legal actors felt overchallenged by the situation and perceived it as negative. The perceived influence character is, therefore, characterized as *ambivalent*.

In order to react to innovation pressure from IS a certain paragraph in the German Traffic Law (StVG) was changed. The following sentence was implemented: 'The Federal Ministry for Transport, Construction and Urban Development is enforced, [...] to direct exemptions from § 6, paragraph 1, number 2, point c, d, k, m, s, t and v for the duration of three years for the purpose of testing an registration process using information and communication technology' (§ 6, paragraph 6 German Traffic Law). This paragraph in itself is highly innovative, because it is a regulation on probation (three years). This enabled the development of new processes based in information technology, which has an *enabling* impact from an IS perspective. Now, other regulations can be prepared by the ministry in order to use information systems for the online car registration. Thus, IS actors can develop legally permitted solutions, which is perceived as positive from an IS perspective. At the same time, the regulation on probation solution was perceived as negative by actors from a legal perspective. They were afraid of losing power of control and abandoning some of the original intent of German Traffic Law. Therefore, the character of this situation was perceived *ambivalent* by actors from the legal and IS perspective.

Each characteristic of the frameworks three dimensions has been observed at least once. Due to the limited quantity of situations it was of course not possible to find situations for every possible combination of characteristics and some combinations are presumably not realistic,at all. However, the orthogonality and combinability of the dimensions, which is also deduced from the analysed related work, appears logic and fitting.

4.3   Project Management Lessons Learned

The case analysis told us something about how to approach a successful integration of the two perspectives IS and law in e-Government projects. The perception of something being predefined and unchangeable coming from actors of one perspective led to frustration and a negative attitude of actors from the other perspective. In contrast, situations, where IS and law had a mutual influence on each other (IS $\leftrightarrow$ Law) and project members collaborated strongly, had a rather enabling impact on reaching the project's goals. These situations were perceived as positive by some and negative by other project actors from both perspectives, which allowed for a differentiated treatment. This overall mentality of interdisciplinary collaboration and differentiated perspective in order to enable innovation is the mentality each project actor should adopt. Thereby, the needs and restrictions of both perspectives, IS and law, should be taken into account and considered collaboratively under consideration of all positive and negative aspects. Based on this insight we suggest five guidelines on how to support this shift towards a collaborative and interdisciplinary advancement of IS and law.

A. Committee for collaborative solution finding

One essential activity to collaboratively develop e-Government solutions is the implementation of committees, in which both IS and legal experts explicate their expectations and requirements. These committees combine all stakeholders and their positions. In the current case, three different legal institutions needed to be considered: the state government because of its responsibility about the car registration law, federal governments because they are responsible for the law execution and in particular for establishing administrative structures and the administration authorities on communal and city level. A new online car registration process affects all three levels and their actors. In addition, IS consultants and IT providers take place in such councils in order to discuss legal expectations and matching IS solutions. In this way a common management support, which contains agreed decisions from the IS and legal perspective, will be prepared. The implementation of a central decision structure across federal borders was also essential in the project in order to make the necessary changes to the law. In the observed case centralized decision structures received decision power to implement experimental clauses in law, which enabled the transformation of the current car registration process. Without such central management support and central decision structure, such a change of traffic law would be very complicated or even impossible. Only a combined decision structure, which contains politicians, administration authorities, lawyers and IS experts, is able to change current laws in the often needed fundamental way.

B. Common communication means

One rather extraordinary activity in the current case was the usage of a process modelling technique to support communication between IS and legal experts. While process modelling techniques are common means for the design of information systems for business purposes (e.g., Recker et al. 2009), this way of describing the world was a totally new approach for legal experts. The cultural differences between IS and legal experts may lead to many misunderstandings and ambiguities so a common communication ground is a promising approach. Experiences from the project provide evidence that a proper business process modelling method, which is able to represent the specialties of legal requirements, helps to overcome the communication gap for process related issues. Positive communication effects of using modelling methods for the conceptual design of processes or data have been proved effective in IS research. The use of modelling methods to increase communication worked quite well for the online car registration project, which points to the extended application of conceptual modelling for e-Government projects. Some work has already been done in this area (e.g.

Alpar and Olbrich 2005). Larger cases, which proved the applicability and relevance of modelling legal aspects, are still missing.

C. Risk communication and common understanding

Risks play an important role in e-Government projects. From the IS perspective, risk evaluation and management often belongs to technical risks. IS experts in the current case asked questions like 'How can we ensure that the service is running 24/7' or 'Which risks do we have in order to be a victim of hacker attacks'. Surely these questions are important, but legal experts do care about another type of risk. Questions like 'Which consequence has a law change for the society in general' or 'Will we discriminate older people when we change the car registration to an online process' are important for actors from the legal perspective. We observed a totally different understanding of the term 'risk', which in turn leads to communication and understanding barriers. But a common understanding of risks is an important requirement for successful collaboration of legal and IS actors. Changes of law will only be executed if the belonging risks are perceived as manageable. In order to get manageable risk perceptions, a common understanding of risks is essential. In the current project this goal was achieved by implementing meetings, in which both IS and legal actors exchange their understanding of risks and find solutions to prevent or reduce these risks.

D. Consideration of goal ambiguities

Besides risk ambiguities, goal ambiguities could be observed, which need to be managed. IS actors often do not understand the goals of legal actors and vice versa. While IS actors focus on an absolutely optimized process, which without doubts, would be realizable from a technical point of view, legal actors try to keep and preserve established procedures. The resulting goals often differ fundamentally. However, both ways have advantages and disadvantages, which have to be discussed and approached collaboratively. Essentially, both perspectives even have the same overall goal: The development and preservation of good or better life situations. Transferring this common goal to an e-Government context means to develop effective, efficient, broad reachable, and distance reducing administration processes (Jaeger and Thompson 2003). Beside numerous conflicts that appear when IS innovations meet legal constraints, the common goal enables enormous potential when thinking about new e-Government solutions collaboratively. A common goal map should be implemented and agreed upon by all participants. In the analysed case we figured out that if actors take over the perspective of the respective other party a positive attitude could be established, which finally leads to a common project success. The project members have to internalize that changes in the societal system have to be aligned with societal acceptance. This requires open-minded and mixed skilled project members, which is a key requirement for all IS projects that have a strong legal focus.

5 Conclusion and Outlook

In this paper the perceived relationship between IS and law was conceptualized. Based on an e-Government case in Germany we derived a framework, which consists of three dimensions. They describe the influence direction, influence character and influence impact of IS and law. We further refined the framework by structuring the e-Government case of online car registration in Germany and mapping several project situations to the framework dimensions. Each situation was coded and fits with the developed framework. Finally, we described management principles that lead to a better alignment of the two perspectives IS and law in e-Government projects.

The contribution of the developed framework is threefold. First, it provides foundations to describe the complex relationship between IS and law. Second, the framework can be used to a) structure a systematic literature review on this topis and b) conduct an empirical analysis of additional e-Government cases or even non e-Government project cases. With such an extended literature review future research must confirm or extend our framework proposal in order to define the scientific view on the relationship of IS and law. Third, based on the derived dimensions, empirical studies to gain a better understanding of the relationship of IS and law can be conducted. In the end a theory about the

relationship of regulation and information systems might be developed, which possibly refines sociological considerations from Luhmann's social systems theory (Luhmann 1995).

Nevertheless, the paper has limitations. We investigated only one case. Even if the case is representational for a group of e-Government projects the framework's feasibility must be proven for other e-Government projects. To get the deputy project leader involved in the interview sessions is meaningful but constraints the expressive power. Interviewing a larger group of project members and analysing the situations from their points of view could further prove the frameworks applicability.

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