

Applying legal principles to stimulate open standards: The role of forums and consortia¹

Robin A. Hoenkamp
University of Amsterdam
TNO

Erwin J.A. Folmer
University of Twente
TNO

George B. Huitema
University of Groningen
TNO

Abstract

In this paper it is argued that openness in standards raises its quality level. This study is done not only from a technical business administration point of view but also from a legal perspective. It is shown that applying legal principles, in particular the principles of Good Governance can stimulate openness in standards. With these it appears that the distinction between official SDOs and other forums and consortia is irrelevant in achieving openness. The setting of this study is illustrated by two practical standardization cases in which openness plays an important role. The results are applied to the important standardization challenge in the upcoming world of Smart Grids.

1 Introduction

The world of data standards is predominated by de facto standards that come about through forums and consortia. The procedures for setting these standards differ greatly among these organizations. Some are open to all interested parties while others only accept specific organizations; some organizations allow intellectual property rights (IPR) while in others IPR is not permitted. This situation results in many different levels of openness in standards with consequences for its quality. For example, standards may be defined that cannot be adopted, thus causing severe drawbacks on innovation interoperability.

In this paper we argue that openness in standards contributes to its quality, especially when they include both industrial and user or other public interests. Governments, European as well as national, are currently discovering the advantages of openness in standardization processes as well. They use different policy tools to stimulate openness for example through procurement law or by guidelines for formal standard development organizations (SDOs). These approaches however do not seem to produce the desired results on openness in standards, including all relevant interests.

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In this research we present a more effective way to encourage the use of open standards, which is already applied to EU decision-making. This paper starts with a description of how openness in standards relates to their quality, and what the role of different types of standardization organizations is in achieving openness. We will then show some legal perspectives on the status of standards and the necessity of openness in them, followed by a description of how existing legal principles can be applied to the standardization process contributing to the openness. Further, two practical standardization cases are presented in which openness plays an important role: the ‘comply or explain’ case in the Dutch standardization policy and the case of Dutch building decree standards. Through these cases it is clearly illustrated what the importance of openness is in the standardization process from an administrative and constitutional law perspective, and that current attempts to stimulate openness might not always give the desired results. Based on our findings we argue that it is not necessary to create new policies for openness, or that official SDOs provide the solution. Finally, we present an application of our results. It is stated that legal principles are crucial for the openness of standards in the upcoming world of *Smart Grids*, thus ensuring coverage of both industrial as well as public interests.

2. Quality and open standards

2.1 Openness as part of quality

This section will define the context of openness in relation to the concepts of standards and quality. Openness is much related to the development & maintenance approach of a standard, and although being part of the quality of a standard, an open standard does not necessarily mean a high quality standard. This will be elaborated below.

Different types of standards can have different type of goals (Blind, 2004; Swann, 2000). For example semantic standards within the domain of ICT try to achieve inter-organizational interoperability. Achievement of interoperability will lead to huge savings and avoidance of social grief like many studies already have shown (Steinfeld, Markus, & Wigand, 2011; Venkatraman, Bala, Venkatesh, & Bates, 2008). The quality of a standard is therefore best described as the level in which the standard is able to achieve its goals. In general this means that the quality of a standard is high when it is fit for use (Juran & Gryna, 1988).

If we have a closer look at a standard then a standard have characteristics in four categories (Otto, Folmer, & Ebner, 2011): 1. Context; 2. Content; 3. Development & Maintenance and 4. Applications. Characteristics in each of these four areas are important, albeit that context characteristics are more descriptive and less adaptable in nature. Actually, the match between on one side the context characteristics, and on the other side the content, development & maintenance, and applications characteristics might be called the quality of the standard. Amongst others this implies that the content should be situational dependent on the context, which sounds obvious. One content might work in one context, but will fail in another context. However it is not enough to focus on one group of characteristics, like content, to get a view on quality. Even a brilliant content and development & maintenance approach, that is fully aligned with the context, will not bring interoperability if there are no applications for the standard.

These categories of characteristics are highly correlated, and therefore characteristics can be used as control factors. Such as control by changing a characteristic of the development approach, this might lead to desired changes in the application characteristics of the standard. For instance an open development process is generally

acknowledged to develop better solutions (contents) of the standards. And since developers are also early-adopters (Zhao, Xia, & Shaw, 2005), it is expected that an open development approach will lead to more and early applications. We conclude that more openness in the development process will raise the quality of the defined standards. In the next subsection we will go in more detail on the notion of openness.

Thus each of the four categories of characteristics mentioned above play their role in determining the quality level of the standards involved. Notwithstanding the fact that both the content (the brilliance of the solution) and the application (adoption/diffusion) are extremely important for achieving the goals of standards, and therefore its quality, we focus on the development & maintenance of standards. We believe that the development & maintenance approach highly affects both content and application characteristics of the standard.

2.2 The debate on open standards

For several years discussions about development & maintenance of standards mainly focuses on the openness of Standards Setting Organizations (SSOs). The trend of more open standards is acknowledged by many authors (Lemley, 2002; Pedersen, Fomin, & Vries, 2009) and was noticed already in the previous decade (Branscomb & Kahin, 1995). One of the main reasons for the current re-emphasis for the call for open standards is the current environment in the IT industry and the rise of global network-based manufacturing (Rachuri 2007). Open standards, but also open source software have significant conceivable implications for IS theory and practice, thereby enabling development of new IT applications, new e-business strategies and consequently the restructuring of IT using industries (Markus, Steinfield, Wigand, & Minton, 2006). But what is openness? There are numerous definitions of open standards, and these lead to arguments between different standards stakeholders. Often standards are characterized as open or closed, but this characterization does not hold since in practice there are many “shades of gray” (West, 2007). Open and closed are the end states of both sides of the balances, and many more options are possible in between. To assess the openness of standards it is more valuable to look at models that capture those states, than to make use of an arguable definition of openness. We will therefore not go into that definition discussion, as it distracts attention on how to achieve more open standards. A broad view on openness is needed instead of a strict and small definition of openness.

Krechmer did important work on setting up a model to facilitate the discussion on openness of standards. He introduced the creator, implementer and user viewpoints and set up requirements for each viewpoint resulting in 10 requirements (Krechmer, 2009):

1. Openness (Open meeting): All stakeholders may participate.
2. Consensus: All interests are discussed and an agreement is found with no domination.
3. Due Process: Balloting and an appeals process may be used to find a resolution.
4. One world (Open world): The same standard for the same function, worldwide.
5. Open IPR: Low or no charge for the IPR required to implement the basic standard.
6. Open documents: All may access and use committee documents, drafts, and completed standards for their intended purpose.
7. Open change: All changes are proposed and agreed within the standardization organization.
8. Open interfaces: Supports migration (backward compatibility), and allows proprietary advantage, but standardized interfaces are not hidden or controlled.
9. Open access (Open use): Objective conformance mechanisms for implementation testing and user evaluation.
10. Ongoing support: Standards are supported until user interests cease.

Although there are enough arguments that open standards will lead to economic and social welfare, it is a myth that all interoperability problems will be solved with open standards. Based on an extensive empirical study, the results raise a cautionary flag to optimists who believe that the use of open standards will reduce product switching costs to zero and create a level playing field for vendors (Chen & Forman, 2006). It is also shown that vendors can influence switching costs and the vendor with the largest installed base of older technology is able to influence the speed of new technology adoption (Chen & Forman, 2006). Moreover the playing field of open standards is complex and not without threats. Two fundamental threads are that there is no real sponsor of the standard in charge of setting the direction, the unanswered question of who is willing to invest in improvements into the standard (Shapiro & Varian, 1999)?

Finally, open standards are prone to splintering or fragmentation and can be hijacked by companies seeking to extend them in proprietary directions (Shapiro & Varian, 1999).

In summary: open standards will not solve all interoperability problems, and they should be approached by a broader view from quality that includes the content and application characteristics of the standard. Solutions have to be found to deal with the mentioned threads of open standards, yet it is no call for less open, or closed standards. It actually is a call to study how openness can best be handled.

2.3 The role of SSOs in open standardization

Different terms are used for an organization that develops and maintains standards, but the most common is the Standards Development Organization (SDO). More recently, the terms Standards Setting Organization (SSO) (Cargill & Bolin, 2007; West, 2007) and Standards Setting Body (SSB) (Jakobs, 2009b) or informal standards development organization (Song, Jiang, & Wu, 2007) are used. Often the term SDO is reserved for the formal/traditional development organizations (Cargill, 1989; Spivak & Brenner, 2001), while SSO includes all the organizations that develop standards, like OASIS, W3C and IETF. Since our research is not limited to formal standards, we use the term SSO for all organizations involved in standards development and maintenance. The formal international SDOs include (Cargill, 1989; Song, et al., 2007):

- Global: ISO, IEC en ITU
- Regional (Europe as an example): CEN, CENELEC, ETSI (ESO's)
- National: ANSI, NEN, DIN, BSI, etc.

Many authors discuss the process of national, European and international formal standardization, most probably because it is fairly complex (Blind, 2004; Cargill, 1989; Cargill & Bolin, 2007; De Vries, 2007; Jakobs, 2009b; Spivak & Brenner, 2001). However the world has changed, which many studies (Branscomb & Kahin, 1995; Cargill, 1995) have shown, but was accurately described by (Hawkins, 2009): “By the late 1980s, spurred largely by the burgeoning Internet phenomenon, most of the significant standardization activity in computing and much of the telecom activity (especially in the higher value-added segments) was occurring in a rapidly expanding array of independent consortia that were dominated by major ICT vendors.” Although ISO created a special committee for Information Technology (JTC1), consortia that have no relation to JTC1 are increasingly producing the important ICT standards (Rada, 1998). The result is that important ICT domain standardization organizations are not part of the formal SDO world, including organizations like W3C, OMG,

OASIS, OAGI, GS1, and more specifically, all sector specific standardization organizations. This consortia movement has led to the fragmentation of standardization (Marc Van Wegberg, 2006), and consortia now dominate the world of ICT standardization (Rada & Ketchell, 2000).

Different terms are used for these organizations including SSO, but also industrial consortia or forums, to stress the voluntary characteristics of contributing to the development of these standards. One of the reasons why ICT standards have been developed outside the traditional SDOs is the need for fast development times, which is possible within SSOs (Marc Van Wegberg, 2006), although the need for faster development times and the assumption that SDOs are slow is questionable (Mähönen, 2000). Also mentioned is the role of consensus decision making which differs between formal SDOs (consensus) and consortia, which has an impact on the speed, and might have an impact on openness as well. This could be to the advantage of formal SDOs (Rada, 1995; Rada, Cargill, & Klensin, 1998). However this might be overtaken in practice (Egyedi, 2003). Especially since many consortia have copied procedures from formal SDOs like consensus decision making and the use of extensive voting, into their own procedures. Other reasons that ICT standards are developed outside traditional SDOs may be confidentiality and IPR (De Vries, 2007).

Van Wegberg (1999) states that to enable the development of a standard with low transaction costs, requires an increase in division of labor, leading to specialized standardization bodies, which explains the growing number of highly specialized standardization bodies. The perceived gains of from standardization led to improving SSOs or even creating new ones (David & Greenstein, 1990).

The existing SSOs differ enormously in nature. Their credibility should not only depend on producing sound standards, but also on avoiding the temptation to abuse standards in making them a cash cow for the organization (Samuelson, 2006). In order to compare different SSOs, especially for the selection of an organization to support a standardization process, a framework has been set up, which has been tested on several SSOs, including OASIS, OMG, W3C and others (Jakobs & Kritzner, 2009). Although it is impossible to state which SSO is the best, some think that IEEE is the best SSO (Cole, 2004), and others mention IETF as a good example of an open SSO (Krechmer, 2008). Related aspects are the speed of the process, consensus in decision making, and free or sold standards, all of which are addressed in the Communications of the ACM (Rada, 1995; Rada, et al., 1998). The latter requires changes within the standardization world. Although one formal SDO does release their standards for free on the Internet (ITU-T). However these comparisons are mainly based on pragmatic aspects but more fundamental issues like the vision of the SSO are often not taken into account.

Reference to forums and consortia in public procurement is only permitted in specific circumstances authorities refrain from using them. This results in a lack of cross-border interoperability between organizations. This issue was until recently not picked up in formal policies, for instance in the European Union: “The commissioners favor the adoption of a unified worldwide terminology, and consider that standards are only those developed by recognized standardization organizations.” (Bucciarelli, 1995). In other words the European regulatory framework is not up to date anymore. However policy attempts to stimulate openness are executed around the world. Based on the wide criticism of Europe’s standards setting framework, many reports have been released related to reforming EU standardization. Most have the vein of self-evaluations from European Standards Organizations (ESOs) and are trying to minimize the change to the existing situation, and are focusing on the value of the current ESO system, thereupon suggesting improvements (EP, 2010; Pindar, 2010). Some of these improvements concern the role of governments (more active participation in

standards development), some concern ESOs (improved access to the standards), and some concern the quality of standards.

In response to the developments the EUROPE 2020 strategy for smart, sustainable and inclusive growth the Commission submitted proposals for regulation on European standardization, which amends several existing directives concerning standards. The most important proposal is to permit standards from non- ESOs, provided that they comply with the WTO principles openness, transparency and consensus for international standardization processes. Furthermore the de jure European standardization process takes far too long. This way conflicting national and de facto standards are developed that create technical barriers to trade. Through the proposal of reporting annual working programs, ESOs should have faster and more efficient standardization processes.

Hereafter the European Parliament invited the European Commission to: “make proposals to accelerate, simplify and modernize standardization procedures notably to allow standards developed by industry to be turned into European standards under certain conditions” (EC, 2011a). The Commission’s answer, released in July 2011, consists of a vision and a regulation (EC, 2011b). The vision aims to adapt Europe’s standards activities to a quickly changing global economic landscape. In order to respond rapidly to evolving needs in all areas, a comprehensive, inclusive, efficient, and technically up-to-date European standardization system will be required. Chief among the measures announced by the Commission are the following initiatives (EC, 2011b):

- The European Commission will enhance its cooperation with European Standardization Organizations (ESOs) in order to speed the availability of standards. ESOs should reduce the average time to develop European standards or European standardization deliverables requested by the Commission by 50% by 2020. This means a reduction from 36 to 18 months by 2020.
- Standards for information and communication technology (ICT) will play a more prominent role in the EU in an effort to stimulate innovation, cut administrative costs, and encourage interoperability between devices, applications, data repositories, services, and networks. The Commission will demand that European standards for innovative products and services be quickly elaborated and adopted, in such fields as eco design, smart grids, energy efficiency of buildings, nanotechnologies, security, and e-mobility.

With regard to e-government, the European Interoperability Framework (EIF) and Strategy (EIS) have been set on a vision of e-government interoperability. The European e-Government Action Plan 2011-2015 (EC, 2010a) sees open specifications and interoperability as pre-conditions for developing e-government. The action plan addresses the importance of standards for cost-effective interoperability. Specific actions are set for carrying out EIF and EIS, organizing exchange of expertise, and aligning the national interoperability frameworks to the EIF (EC, 2010b). A focus on mandating open standards exists within e-governments, particularly in national policies such as the Dutch policy named “Netherlands Open in Connection” (NOiV, 2007), which will be elaborated on further on in this paper. Other examples include the UK government (CabinetOffice, 2011), but also India has set a policy (GoI, 2010) which has similarities to the Dutch and UK government policies on promoting open standards (Mutkoski, 2011).

Another example is the US health care program with its ambition to achieve quality and efficient health care, former President George W. Bush declared an executive order, stating a commitment to standards to achieve quality and efficient health care (US, 2006). It should reduce the calculated 98.000 losses of life caused annually by a lack of interoperability in care ICT systems (Venkatraman, Bala, Venkatesh, & Bates, 2008).

The US standardization system is highly decentralized, and the US administration does not intervene in the process, nor does it mandate any standards, which is contrary to European governments, but it requires US government agencies to participate in standardization (Ernst, 2010). The only requirement of the United States Standards Strategy is that “The process encourages coherence to avoid overlapping and conflicting standards (ANSI, 2010).”

Within the ICT standardization arena the influence of Asian countries, most notably China, is increasing (Jakobs, 2009a). China’s latest plan for standardization defines standardization as an enabling platform for indigenous innovation: using standards as a tool for economic development (Ernst, 2010). Based on lessons learned from different ICT standards projects (Fomin, Su, & Gao, 2011; Stewart, Shen, Wang, & Graham, 2011), China’s policy has moved from regulation to promotional activities, taking a more flexible and pragmatic approach and moving in the international domain from being a standards user, to a co-shaper and in some areas the lead shaper (Ernst, 2010).

Although oversimplified, and not covering the changing role of China, Krechmer (SIIT Mailinglist, August 13th 2011) summarizes it as: "The EU funds their standards, seeing them as a governmental issue. America ignores their standards, seeing them as a commercial issue. China enforces their standards, seeing them as a policy issue”.

Of course all these policies do not solve the problems surrounding openness. SSOs are tempted to claim they are open when they are not, or to be open for some purposes but closed for others, or even to encourage openness without requiring it (Lemley, 2002). But, within the broad range of IT, not many SSOs are fully committed to open standards (Lemley, 2002). In many domains, for example multimedia, closed standards are a big problem for interoperability and digital sustainability and longevity. Luckily, not in the area of inter-organizational interoperability since most e-business standards are freely available and exhibit good public features (Zhao, Xia, & Shaw, 2007).

When viewing the openness issue from this perspective are those policies even necessary? One must be alert when policies are only focusing on openness of standards, and/or focus on setting a definition on openness. These aims can be undesirable, potentially misleading, and probably not needed. The latter will be the message of this paper.

3. The legal basis for openness in standards

3.1 The legal story of standards

Despite the lack of effective policies to improve the quality (i.e. openness) of standards we mentioned in the previous chapter, standards are, and have been for a while, an important EU policy tool for supporting the establishment a single market. To demonstrate the role of standards, and with that the importance of openness, we will sketch a short history of standardization policy in the EU and illustrate the context of the current state of IT standardization in the EU.

Naturally, the first standards in Europe were aimed at interoperability, e.g. for interconnecting national railways. During the course of the 20th century standards started to provide another function, mainly in the EU context. As member states’ policies started to demand certain levels of health and safety in technologies, standards became crucial instruments to execute those policies. As these standards were nonetheless set by member states independently, they formed a barrier to cross border trade. For a while this problem was caught through directives, which encompassed technical requirements. This meant that standards had to be agreed upon by all member states, triggering a long lasting (if not

impossible) task. It soon became clear that laying down these standards in Council Directives was too complicated and took far too long. This problem led to the introduction of the so-called *New Approach* to standardization. In the *White Paper on Completing the Internal Market* (EC, 1985) the Commission introduced a new way standards would cover essential health or safety requirements, which was enforced through a Council Resolution (Council, 1985). These requirements would be laid down in directives and would be technology neutral prescribing only a minimum level of health or safety requirements. On the basis of such a 'New Approach Directive' official European standardization organizations (ESOs) would develop the best standard to meet those criteria. The member state representation would then be safeguarded through the standardization committees in which National Standardization Bodies (NSB) brought forward representatives.

Once these standards were completed they were published in the *Official Journal* of the European Union and became European standards (EN). This system is still in practice. A consequence of the status of EN is that the NSBs need to adopt the standard as a national standard and no national standards may conflict with the EN. This system of developing ENs is thereby a crucial instrument in establishing a single European Market (Single European Act, OJ (1987) L 169).

Directive 98/34/EC is the most important elaboration on the New Approach as it regulates the procedure of standardization between the Commission, ESOs, member states, and NSBs. As it became clear that societal stakeholders should also be involved in the process several representative groups have been included in the process, though they do not enjoy voting rights (CEN, 2004).

3.2 Standards are law

In response to the increase of importance of standards in society, several legal studies attempted to understand the binding nature of standards. When standards are binding they will need a certain level of openness to comply with them. In this section we will study how standards can become binding from two different *legal* points of view. We note that instead many legal scholars look at standards only from an IPR perspective, we will not go here into this area of law specifically. Already the Krechmer model presented in section 2.2 shows that there is more to openness than the question of IPR on standards.

The first point of view puts forward a question of administrative and constitutional law as to what the legal consequence of referring to standards in laws is. The second point of view has a law and technology approach, regarding how standards fit in the legal system in general. Through both approaches we will demonstrate how standards are legally binding, and with that show the necessity of openness.

Standards can become binding in several ways. On one side of the scale are *de facto* standards that have binding force merely because they have become the conventional standard in a certain area. Market parties can develop them without any interference of the government or any official party. On the other side are standards that are explicitly referred to in a law and developed by an official standardization body. Both sides of the scale can have equally binding effects in practice, yet in theory there is a difference.

The question from an administrative law perspective is to what extent these different types of standards obtain legal force. This question is especially important on the side of the scale where laws refer to standards. There generally are three different ways in which laws mention standards. One way is the rigid reference, when the law refers to a specific version of a standard. The second type is the dynamic reference, when the standard number and title are given, but the version is not mentioned. Finally open clauses make general reference to norms without specifying a title or version. These differences were first mentioned by Marburger (Marburger 1979). Furthermore, there is a difference in standards that are essential for the

law to have meaning in the sense that the law specifies the norm, and standards that only complement a provision. Most scholars agree that individual standards are not legally binding. However when they are part of laws, and especially when the standard specifies the norm, the standard is supposed to have legal authority (Stuurman 1995; Elferink 1998). When a standard only complements the law, and just exemplifies its meaning with a standard, the law also has meaning without the standards, and the standard itself therefore does not obtain legal authority. However when the standard specifies a legal norm, it cannot be understood without access to the standard. Consequently the standard obtains legal authority. In this case it becomes crucial that the standard is developed in an open process and the standards itself is open enough in order for everyone to abide by the law.

Next to this administrative law view on standards, the area information law or law and technology brings a noteworthy perspective on standards. This perspective shows how technology is bedded in the legal system. Here the theory of *Code is Law* (Lessig 2006) or earlier *Lex Informatica* (Reidenberg 1998) that explains why codes are a type of law, provides an interesting angle. Code is Law states that developers regulate the possibilities of codes through the architectural choices they make. This way codes, be it deliberately or not, determine the freedom and rights users enjoy with software or hardware. As following standards imply how code should be used they are law in this sense as well. In this case there is no difference between the binding force of standards on either side of the aforementioned scale. The only factor that impacts the level of binding force is how much choice in practice exists for users in whether and how to use a standard.

Since from both an administrative law point of view and the field of law and technology standards can have legal force, it is important that careful consideration of interests is taken in the process. Participants in standardization processes are mainly private parties. Private parties have a special position in society as opposed to the government. When government delegates technological decisions to SDOs, be it formal or informal, it gives them the power to make choices concerning policy, yet sidestep the limitations afforded by human rights to which only governments need to abide (Donnelly 2007). Since the parties in the standardization process have financial motives, there is a strong incentive to sacrifice individual rights to increase profit, so they are biased. Even in the case that private parties need to abide to e.g. privacy law, there is a good chance that in a closed process they will be overlooked, as they are not encompassed in the process and no one can check whether it is taken into account. In the next section we will see how this issue can be dealt with.

3.3 Principles of Good Governance define openness

When policy is worked out in binding rules, it becomes part of the law. Therefore in most countries, this process of lawmaking needs to comply with specific procedural principles in order to balance relevant interests proportionally and with that ensure that public interests are taken into account. As shown in the previous section standards are law, which triggers the obligation to abide by such procedural principles. The principles can provide the necessary constitutionality for standards (Stuurman 1995).

The *Principles of Good Governance* play this role in the EU the preparation in the implementation and the enforcement of policies. In the *White Paper on European Governance* (EC 2001) these principles are defined: participation, openness, accountability, effectiveness, and coherence. If standards are a regulatory force this means that standardization on a European level should abide by these principles. Moreover according to a communication from the Commission to the European Parliament, applying these principles to the standardization process is essential to provide the necessary accountability and legitimacy (EC 2004a).

The standardization process, of course distinguishes similar principles. Based on the WTO principles, the General Guidelines for the cooperation between CEN, CENELEC and ETSI demand a transparent, inclusive process based on consensus. These principles however are not further specified and moreover the guidelines are not legally binding.

In practice, applying the principles can have several different outcomes. Below we will illustrate these principles by giving standardization examples. As the meaning of the principles is still subject to interpretation, the exact outcome in the standardization process will need further research. Below we will give some preliminary estimates of examples of what the principles could mean.

Participation. Participation means that *all* stakeholders that can potentially be affected by the decisions may contribute to the process. The parties will need to have actual access to the process (Mendes 2011). Standards can in practice affect and restrict several stakeholders. They can have impact on the market positions of SMEs, the protection of environment, employers, consumers, etc. Therefore the participation of all such groups should be provided for during standardization, granting the possibility to effectively participate in the process (Council 2002). The principle even goes as far as containing the right to influence the process (Héritier 2003). Therefore they should not only in theory be able to participate, but in practice they need be able to influence the process. This could mean that extra effort has to be made to provide these parties with the relevant information to participate in the process. This is different from the current situation, as even when societal stakeholders take part in the standardization process, they do not have the relevant knowledge to fully participate in the process. It would furthermore give societal stakeholders a basis for the right to vote in the standardization process, which is not possible based on the current guidelines.

Openness. Applying the principle of openness can benefit the standardization process similarly. An important aspect of openness is up-to-date online information throughout the stages of decision-making (Curtin & Wessel 2005). This means that the standardization organization will have to publish their minutes and relevant documents, in order to provide access to information. This will impel them to have a more transparent way of communicating their progress in standardization, enabling others to comment on their progress. They will thereby be open for feedback during the process, lowering the chance of rejection after the standard is finished.

Accountability. To achieve good governance of standards accountability is needed. This means that decision makers should at least declare their objectives (Bronsword 2008). They need to explain and take responsibility for their decisions (EC 2201). This would mean that the aim of the standards should be made clear. Accountability could furthermore imply that bodies should be under judicial review or answerable to government, which is not currently the case with standards.

Effectiveness. Applying the principle of effectiveness could mean that first of all the process must be timely. More importantly it encompasses the need for stating objectives clearly and evaluate the future impact of a standard.

Coherence. Coherence means a consistent approach in all standardization activities. Moreover it means that standardization takes EU policies into account. The White Paper for example specifically mentions climate change issues for that matter. To go even further coherence can mean that the different standardization bodies adjust to each other in the sense that no conflicting standards should be developed.

A crucial aspect of these principles is that they can be applied to all SSOs regardless if they have a formal or informal character. This means that we do not have to rely on general

official standardization organizations. If applying the principles becomes a requirement for the status of European standard, the distinction of official and industry forums is pointless. All organizations are capable of applying the principles and the label of official or not becomes irrelevant.

When looking at the above-mentioned list, one can discover many resemblances with Krechmer’s requirements for openness from section 2.2. This shows that applying the principles of good governance will significantly contribute to the openness of standards. In the table below we show which of Krechmer’s requirements match the principles of Good Governance:

Good Governance Principle	Requirement Krechmer
Participation	Openness
Openness	Open IPR, Open documents
Accountability	Due process
Effectiveness	Open access
Coherence	One world

As discussed in section 2, we do not need a definition of openness. There already exist principles of Good Governance that currently are not applied to the standardization process. Yet when looking at the legal system they actually should. Applying these principles will encourage the openness of the standards, and with that their quality.

We also need to point out that the introduction of the principles of Good Governance will not ensure that no double standards for the same subject will be developed. Of course, organizations are free to develop any standard they want and also free not to comply with the principles of Good Governance. However, when the principles *are* applied, there should be no overlap in standards.

Finally, when these principles are applied to the process, no overlap will occur. The principles of openness and coherence will prevent different organizations from developing the same standards. However there is no way to avoid overlap in general. When organizations develop standards without applying the principles, there is a chance that more standards for the same technology will occur.

4. Cases illustrating the need for open standards by legal principles

4.1 The Building Decree case; complications of applying closed standards in law

It is clear that when standards are not linked to regulation, they are not by themselves legally binding. However in the Netherlands in certain areas of law standards play an important role. Inspired by the previously described developments in the EU in the New Approach to standardization the Dutch legislator uses standards more and more as a flexible tool to supplement laws.

An example is building law, which is especially influenced by standards, through the Building Decree (Bouwbesluit 2003). This decree refers to almost 70 Dutch ‘NEN’ standards directly. The standards mostly influence the process of granting building permits. The legal basis for referring to standards in this decree lies in article 3 of the Housing Act.

The status of the standards in the Building Decree have recently been the center of the debate in a case where the company Knooble intended to publish relevant standards from the Decree on their website for free. This prompted the question what the legal status of such standards are. If these standards in the Decree, should be considered as ‘generally binding regulation’ this means that they should be published following the *Publication Act (PA)*, and

art. 11 of the *Copyright Act (CA)* would exempt the standard from copyright. Initially the The Hague court decided that as the standards were not (yet) published according to the Publication Act they were not generally binding, and therefore the exemption of art. 11 CA did not apply. However the statement that the standards in the building Decree were not generally binding would imply that they would not have to be enforced in the permits.

In appeal the Council of State however decided that even though standards cannot be considered as ‘generally binding regulation’ they are still generally binding and therefore can be enforced (ABRvS 2 februari 2011, NJB 2011, 698). The Council of State uses the reasoning that in Explanatory Memorandum of the Housing Act it appears that the NSB Netherlands Standardization Institute (NEN) is not a body authorized to make ‘generally binding regulation’, and therefore the NEN standards cannot be regarded as such. However, from the Explanatory Memorandum of the PA follows that standards can become part of the law, which should be ‘known to citizens’. Referring to the location where the standard can be found is enough to be ‘known to citizens’. Consequently his decision means that the standards are not ‘generally binding regulation’, yet they are binding for the public wishing to abide by building permits. For now this is the final decision, but Knooble will appeal the decision for the Supreme Court.

This decision is of course very practical. Would the Council of State have decided that the standards were actually ‘generally binding regulation’, the NEN would have to be attributed the authority to make those decisions by law. A consequence for the NEN could in that case also be that they would lose a minor source of income, as all their paid standards appearing in regulation would have to become publically available. However, the NEN in any case receives funding from the government, so it should not necessarily be a problem. An important outcome would however be that would mean that the NEN would become publically accountable for their decisions. The current decision saves the NEN from this complication.

One cannot overlook the fact that this decision contradicts our argument that standards are law. However the reasoning of the Council of State is understandably a reasoning, which suits their position in the legal system. As part of the judicial authority it is their task to interpret the laws as they were meant, in this case that meant following the explanatory memoranda. Courts do not give judgments on what is right or wise. Their argument comes down to the statement that the NEN can set binding rules, and because they do not have the formal power to set those rules, they are not accountable, nor do they have to comply with the regular publication rules to boot. This seems like an unnerving ruling, and when observing the progression of using standards as a policy tool instead of legislation, it can become very tricky business. After all everyone is supposed to know the relevant law. It seems very unreasonable if you then have to pay fees for all the relevant standards to discover what the law requires from you.

This case thus clearly demonstrates the complications of referring to closed standards in laws.

4.2 The case of the comply- or-explain principle; insufficient policies

This section will discuss the case of the Dutch policy on open standards where the so called comply-or-explain regime is used by government. To stimulate the use of open standards and to guide the change process, the Dutch government has initiated the action plan *The Netherlands Open in Connection* (Dutch abbreviation: NOiV), which consists of several action lines resulting in three objectives (NOiV, 2007):

1. Increase interoperability of information system in the Dutch public sector by accelerating the use of open standards

2. Reduce dependence on suppliers in the use of ICT through faster introduction of open standards
3. Promote a level playing field in the software market by using open standards

The Dutch government intends to encourage the use of open standards within the public and semi-public sector. The key focus is: use open standards, unless there is a very good reason why this is not possible, and indicate when open standards will indeed be implemented. This is the principle of *comply-or-explain, and commit* or shortly *comply-or-explain*. Through this principle the use of open standards will be given a firm foundation.

In order to be able to implement the government's policy, a process of selecting and applying open standards based on a clear framework for interoperability should be determined. This is done by the Bureau Forum Standardization (BFS), Standardization Forum (SF) and Standardization Board (SB). BFS is a program office that selects the open standards that fall under the comply-or-explain rule, by carrying out a procedure that is gratified by SF and SB. The SB and SF were established by decree by the Minister of Economic Affairs on 27 March 2006, see (http://www.forumstandaardisatie.nl/fileadmin/os/documenten/Hernieuwd%20instellingsbesluit_UK.pdf).

BFS maintains three separate lists of open standards:

1. *Comply-or-explain standards*. These standards are often not yet widely used within the Dutch public sector, but the use of these standards is mandatory. The standards on this list are usually semantic standards, like SETU (procurement), XBRL (finance) and StUF (administrative) and these standards are often a specific instance of a global standard (like SETU, which is a location-specific version of HR-XML). These standards enjoy the status of 'high trust' and the level of binding nature depends on different factors.
2. *Frequently applied standards*. These standards are widely used in the architecture of information systems. These *de facto* standards are often technical, world-wide standards located at the lower layers in the OSI reference model, like the TCP/IP-protocol, SMTP et cetera. This list helps purchasers in the public sector in tendering among others.
3. And finally there is also a list of standards that are *mandatory by law*.

The definition of open standards which is used by Dutch government complies with the definition which is used by the European Interoperability Framework 1.0 (EC, 2004b). In summary, this Dutch policy makes the use open standards mandatory for all (semi) public organizations.

There is an assessment procedure and criteria, established by the SB, formalized that sets the scene for inclusion of a specific standard on the list. The assessment procedure can be found on

http://www.forumstandaardisatie.nl/fileadmin/os/documenten/Assessment_Procedure_and_Criteria_for_Lists_of_Open_Standards.pdf.

In summary it starts with a submission which is followed by an intake, expert examination, public consultation, recommendation by the SF, and finally the decision by the SB. Within this process criteria in four categories are used:

1. Open standardization process (open development & management)

2. Added value (substantial added value for society)
3. Support (stakeholders support inclusion on the list)
4. Inclusion promotes adoption

For the purpose of this article we discuss the potential issue of openness with this approach. The question arises whether this assessment process is really open? And are the standards on the comply-or-explain list really open? As an example we examined NEN-ISO/IEC 27001:2005NL. First of all there is hardly any documentation available of the assessment procedure for this standard in contrary to many other standards on the list. It seems some standards have slipped through, which questions the openness of the assessment procedure itself.

Secondly, although this standard is on the list it is highly questionable if it satisfies several out of the four criteria. For example openness: This standard is available within the NEN web shop for EUR 172,48. You might argue if this is a nominal fee, but you may also argue if other openness criteria have been met, for instance regarding stakeholder involvement: there is no evidence for that. It also raises the question if this standard is mandatory for all Dutch government organizations, then probably all these organizations should have bought the standard from NEN. Auditing appliance of this standard within each Dutch government organization might be done by asking to show the specification document, or asking NEN who has bought the specification document. This would make a very good business case for NEN.

4.3 Application to the upcoming world of Smart Grids

In the next decades we will see a major transformation of the current energy system to a more sustainable infrastructure. In particular there will be an increase of participating distributed energy generators. In order to maintain the high quality level of the energy supply, ICT has to be developed and integrated with the energy grid to create an overall intelligent, controllable energy system, the so-called *Smart Grid* (ETP SG, 2012). Since Smart Grids form a green field they offer us a perfect chance to do the necessary standardizations of Smart Grid technology, processes and systems right from the beginning.

The introduction of the so-called *smart meter* is one of the first phases in the transition to smart grids. Smart meters have already been rolled out in some European countries. Not surprisingly the problem of lack of openness has already been seen in these rollouts. First of all, some countries standardized independently from each other, which could have been avoided when the Good Governance principle of coherence was applied. Moreover, in the Netherlands, the lack of participation of end users and societal stakeholders caused the preliminary standards to be undesired (Hoenkamp et al. , 2011).

Especially when realizing that a reliable energy provision is a basic public need, it is crucial that not only industrial interests drive the standardization process, but also that all relevant public interests are taken into account as well. Applying the Good Governance principle of participation for example, will therefore be crucial. The introduction of smart meters is just the beginning of the transition in the current energy market. We believe that for the success of the whole transition it is necessary that all Smart Grid standards comply with openness and have high a quality level.

5. Conclusions

In this paper we consider the quality of standards. We argue that the openness of standards raises the quality level. Openness means here that in particular the standards show a balance of interests between all related stakeholders. Thus both industrial as well as public interests may be covered. We have shown that specific legal principles, the Good Governance principles, apply to such an open standardization process. We derive the following conclusions:

1. Principles of Good Governance make other policies redundant.

First of all, we have shown that principles, such as the comply-or-explain, are unnecessary to guarantee the use of open standards within the public domain. The principles of Good Governance already accommodate this, making policies as comply-or-explain principle redundant. Still, one could argue that the list can be used for other goals than assuring open standards within the public domain, as for example the selection of specific standards with a positive business case for the public domain. However with such goals call for a different approach to the comply-or-explain principle. The approach we follow is a focus on selecting *open* standards. This leads to a procedure in which criteria have been made quite objective. Although other criteria related to the quality or adoption are used within the procedure, these are on a different level, being less important and more subjective. When selecting specific standards for comply-or-explain, the focus should have been on selecting high quality standards (instead of open standards). High quality standards are defined as fitness for use, which includes the intrinsic quality, the development and management approach, and the quality in use (Folmer, 2012). In this approach openness is automatically taken into account.

2. Distinction between 'formal' and 'industry' standards is irrelevant.

Both formal SDOs and industry forums and consortia can set standards, which comply with the principles of Good Governance. There is no reasonable explanation why formal SSOs should be more capable to imply these principles than any other organization, as they are in many cases even more closed than industry consortia. This implies that standards from both types of SSOs should be treated equally, as long as they comply with the principles.

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