

## STAKEHOLDER IDENTIFICATION IN IT STANDARDIZATION PROCESSES

Henk de Vries  
Rotterdam School of Management  
PO Box 1738  
3000 DR ROTTERDAM  
The Netherlands  
+31 10 408 2002  
+31 10 408 9014  
H.Vries@fbk.eur.nl

Hugo Verheul  
Delft University of Technology  
PO Box 5015  
2600 GA DELFT  
The Netherlands  
+31 15 278 1139  
+31 15 278 6439  
h.h.m.verheul@tbn.tudelft.nl

Harmen Willemse  
Rotterdam School of Management  
PO Box 1738  
3000 DR ROTTERDAM  
The Netherlands  
+31 10 408 2002  
+31 10 408 9014

### ABSTRACT

Adequate stakeholder participation is essential to standardization processes in information technology. The stakeholder structure in information technology is complex and dynamic, while IT standards can have pervasive effects on many industrial sectors and even wider segments of society. However, there are strong indications of unbalanced stakeholder representation in IT standardization processes.

This paper presents a method for stakeholder identification and classification, which can be applied in IT standardization processes. Systematic stakeholder identification is an important first step in improving stakeholder participation. The method can be applied by standardization officers, committee members and other relevant parties in their identification of potential participants of standardization committees, working groups or other organizational forms where standards are developed. The method consists of two parts: a set of search heuristics to identify all relevant stakeholders, and a typology that can be used to differentiate between essential and less important stakeholders. A first application of the method was promising: the method provided a significant improvement over existing practices of stakeholder identification.

**Keywords:** Standards, standardization, stakeholder, stakeholder analysis, participation, methodology.

### INTRODUCTION

The composition of standard committees is an essential element of standardization processes. A committee made up of many different stakeholders justifies the principle of openness for representation of all interested parties, which is a fundamental characteristic of formal standardization. In practice, however, many standardization processes are characterized by unbalances in stakeholder representation. Some stakeholder groups appear to be dominant, while others experience barriers for participation. This is not only a problem because of the 'democratic' principles of openness and consensus of formal standardization processes; it can also have a negative impact on the quality and the use of the resulting standard. On the other hand, increasing stakeholder participation will make

the standardization process likely to become more complex and time-consuming. Also, not all stakeholders are willing to participate in the standardization process. The involvement of stakeholders in standardization processes should therefore be the result of a conscious deliberation. In many cases however, it is not apparent beforehand which stakeholders are affected by a certain standard, or should otherwise play a role in the standardization process. A systematic analysis will in many cases be needed to provide an overview of the relevant stakeholders.

This paper presents a method for stakeholder identification and classification, which can be applied in IT standardization processes. The method is based on standardization literature and stakeholder theory, and has been tested in four ex post analyses of standardization processes. The objective of this method is to support standardization officers, committee members and other relevant parties in their identification of potential participants of standardization committees, working groups or other organizational forms where standards are developed. The scope of the research is limited to formal standardization processes, although the method may be applied wider to include consortia and other non-formal standardization bodies.

The structure of the paper is as follows. The next section demonstrates the relevance of improving stakeholder participation in standardization processes in the information technology sector. Next, the theoretical background of the method is introduced. The method itself consists of two parts. First, search directions for the identification of stakeholders are presented: categories of firms and organizations that may have a stake in the standardization process. The next step is a stakeholder classification structure, which can be used to differentiate between stakeholders whose participation is essential, and stakeholders that can be given a less central role in the standardization process. The results of the first application of the method are presented next. The paper concludes with a discussion of the possible applications of the method and its potential to increase stakeholder participation in IT standardization processes.

### **THE IMPORTANCE OF STAKEHOLDER PARTICIPATION IN IT STANDARDIZATION PROCESSES**

Specifications of many of Microsoft's products can be regarded as standards because of their intended and expected massive use. One company prepared them, without involvement of other stakeholders. However, most standards result from standardization processes in which more stakeholders are involved. Sometimes there is limited access: only a few stakeholders or just one or some categories of stakeholders are allowed to participate. This applies especially for certain industrial consortia. The standardization activities are open only for those who have been invited by the consortium and the rules for being invited differ from consortium to consortium (Cargill, 1997, p. 40). In many consortia, however, and in most governmental and sectoral standardization organizations many or all stakeholders are welcome to participate and in formal standardization all stakeholders are explicitly welcome. The scope of this paper is limited to formal standardization and therefore we use the official definition of 'standard': document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context (ISO/IEC, 1996, Clause 3.2).

This openness to all stakeholders is one of the main principles of formal standardization processes in general (ISO, 2001, paragraph 2.3; ITU, 1992, Article 2; Olshefsky & Hugo, 2003; NSSF, 2003, p. 4). In the IT sector, the role of users is particularly relevant. In some cases users have played a major role in standards

setting. MAP<sup>1</sup> standardization, for example, was initiated by a big user: General Motors. GM involved other users. In the course of the process a shift from user-orientation to vendor domination could be witnessed (Dankbaar & Van Tulder, 1991, p. 29). In general, *coalitions* of users can be better vehicles for user participation in standardization than individual users (Forey, 1994; Jakobs, Procter & Williams, 1998).

Users may be regarded as organizations buying products affected by standards or using (external) standards for their production processes. In their book about user needs in IT standards, Evans, Meek, and Walker (1993, pp. 3-4) make a distinction between: *end users/terminal operators* using the computer as a tool in their job, *system administrators* who maintain the integrity of the IT environment, *users who establish and maintain the IT environment*, and *developers* who develop a solution to a problem, for instance, by making software or by integrating systems. *Non-human users* form a final category: information processing systems. All use IT standards, but will, in general, have different requirements. Evans, Meek and Walker seem to ignore final consumers as another user category. Their needs with regard to IT standardization are addressed by ANEC (2003). Naemura (1995, p. 96-97) stresses the need for standards providers to try to identify the various implementers in different environments. He draws a layered model of user types analogous to the Open System Interconnection Model.

Despite their important role, it seems that representation of users in IT standardization is often inadequate. Jakobs, Procter and Williams (2001) investigated IT standardization working groups of the International Organization for Standardization (ISO), the International Telecommunication Union (ITU) and the Internet Engineering Task Force (IETF) and found that other parties that participate include consultants, academia, research institutes, and governmental agencies. However, more than 60% of the participants come from providers or vendors. Especially users are underrepresented. Spring et al. (1995) found that in CCITT X3 committees for data communications standards, 75% of the participants described their job function as either R&D or product development. Only ten percent identified themselves as users. The remaining categories included marketing/sales, operations, system integration, consultant, and government representative –an unbalanced representation again. Rankine (1995, p. 567) concludes that users are not sufficiently involved in IT standards setting. The standards organizations concerned are open for participation of all stakeholders, but apparently there are barriers for participation. In our research project we found 27 different barriers, for example, lack of knowledge, time and money of potential participants, lack of transparency in committee structures and standards development procedures, standardization officers' and conveners' behavior, and committee culture (Verheul & De Vries, 2003). A major barrier appeared to be the lack of conscious and systematic stakeholder identification and selection prior to the standardization process. In many cases, a stable network of participants is involved in the development of related standards. No external search is carried out in order to identify additional potential stakeholders. It can be questioned whether or not the one-sided representation is a problem. Jakobs, Procter and Williams (2001, p. 6) state that users are the only ones in a position to contribute meaningful real-world requirements to the process, and their voice needs to be heard and strengthened, though their participation might cause problems because of the diversity of users. The fact that many of the thousands of standards that have been developed by ISO/IEC/JTC1 (the Joint Technical Committee on Information Technology of the International Organization for Standardization and the International Electrotechnical Commission) are hardly used in practice may be

---

<sup>1</sup>MAP = *Manufacturing Automation Protocol* – a set of standards defining rules for electronic communication in a manufacturing environment.

related to unbalanced representation of the stakeholders in the committees.

More in general, involvement of users and other stakeholder groups may contribute to the quality of the resulting standards and may enhance stakeholder preparedness to use these standards. Leiss (1995, p. 61), for instance, concludes that the tasks of setting and enforcing (environmental) standards are best conceived as a process of continuous micro-management, which requires the participation of a broad range of stakeholders. The European employers organization UNICE (1991, p. 3) states that co-operation at an early stage with all interested circles is indispensable in order to take the various requirements into account.

In the special case of governments that refer to standards in their legislation the openness for involvement of all parties concerned may be a prerequisite for their willingness to refer to the standards. The European public procurement directive (Council of the European Communities, 1993), for instance, explicitly list categories of standards of decreasing preference: (1) European standards, European technical approvals or common technical specifications, (2) national standards implementing international standards accepted by the country of the contracting authority, (3) other national standards and national technical approvals of the country of the contracting authority, and (4) any other standard. The European 'New Approach Directives' that apply to more than 50% of all products on the European market refer to formal (European) standards only. This preference is based on the legitimacy related to the principles of formal standardization, especially the principles of openness and consensus. Openness is the possibility for all interested parties to be represented in standardization. Within committees, decision-making is consensus-based, which should enable less power-full stakeholders to play a full role. This 'democratic' character should distinguish formal standardization organizations from others, in particular, consortia. However, Egyedi (2001) concludes that formal standardization organizations may be democratic in theory but seem to fail to be this in praxis, whereas most consortia are more 'democratic' than they are said to be. So the governmental preference for formal bodies may be disputed. This may challenge formal standardization organization to improve their practice. Our research project aimed to contribute to this in the case of the national standards body of The Netherlands. However, this body's primary concern is not to be 'acceptable' for the government but to serve the market better, especially the 'weak' stakeholders.

IT is just one of the sectors in which this issue is relevant, though it might be a sector in which stakeholder representation is extremely unbalanced. Given the deep impact of IT on many stakeholders (for instance, big, medium-sized and small companies, consumers, workers and their representatives), the issue of stakeholder involvement may be particularly important in this sector. Moreover, IT is more novel and innovative; networks are more dynamic and have not become as institutionalized as in other sectors. This makes a regular check on the balanced representation of stakeholders in standardization all the more necessary.

### **A METHOD FOR STAKEHOLDER IDENTIFICATION**

Achieving a balanced stakeholder representation in standardization processes depends on many factors. Stakeholders need to be contacted and they have to be prepared to participate in the standardization activities. After that, the standardization process needs to be managed properly so that all participating stakeholders remain involved and committed to the process. The *identification* of potential stakeholders is an essential first step in getting stakeholders to participate. A widely accepted, broad definition of a stakeholder is given by Freeman, who considers "any group or individual who can affect or is affected by the achievement of the organization's objectives" to be a stakeholder (1984, p. 46). Based on this definition, a

standardization process, defined as the development or revision of a standard or a cluster of related standards, usually involves a large and heterogeneous group of stakeholders. Producing firms, customers, end users, certification institutes, societal interest groups, all these stakeholders and more may want to influence the standardization process or may be affected by it. In practice not all stakeholders will have to play an active role in the standardization process. However, given the importance of stakeholder representation in standardization, those responsible for the standardization process ought to be familiar with the full set of stakeholders. Furthermore, it may be helpful to be aware of the positions of these stakeholders towards the standardization process and the issues involved.

### **Theoretical considerations**

The method described below is aimed as a tool for the systematic identification of stakeholders and the determination of their positions (classification). Improving stakeholder identification and classification is expected to contribute to a more balanced stakeholder representation, in the IT sector as well as other sectors. This method, which is based on insights from stakeholder theory, consists of two parts. First a search heuristic is developed to identify all the stakeholders, or as many as possible, in a standardization process. Nine directions for tracing potential stakeholders are identified. Using this search heuristic enables to go beyond the existing network and fixed preconceptions on which actors should be involved in the standardization process. The second part consists of a classification based on stakeholder salience. Applying this classification provides information on the probable roles that stakeholders can play in the standardization process, and can provide insight regarding the actions that need to be taken to involve various stakeholders in the process.

The role of stakeholders in the firm's strategy and operation has received considerable attention in management research over the last two decades. The reasons for advocating the stakeholder approach falls into two broad categories.<sup>2</sup> First, there is the normative argument that the firm has the moral obligation to account for its activities towards those affected by them. The second argument is more pragmatic: firms that take into account the needs and interests of their various stakeholders are financially more successful, according to stakeholder theorists (Beaver, 1999). The attention to stakeholders has resulted in a large variety of stakeholder typologies and other sources for stakeholder identification (Mitchell et al., 1997). Underlying these typologies lie different perspectives on who or what counts as a stakeholder, and why the firm should account for its interests. Some of the main variables in stakeholder identification approaches are the ability of the stakeholder to affect the firm's activities and the existing relationship between the stakeholder and the firm. A pragmatic view on stakeholder involvement tends to limit the identification of stakeholders to those groups and organizations which can affect the firm, while a predominantly normative perspective implies a broad identification of stakeholders as all entities that are affected by the firm. Secondly, some scholars believe that only groups and organizations that have an actual relationship with the firm should be taken into account as a stakeholder. Mitchell et al. (1997), however, argue that stakeholders may also have a latent or potential relationship with the firm: groups and organizations may be affected by the firm's activities without interacting with the firm on a social level, and some stakeholders may affect the firm's activities without having a direct relationship to the firm.

---

<sup>2</sup> This representation of stakeholder advocate's positions is based on the overviews of stakeholder literature. presented by Mitchell et al. (1997) and Rowley and Moldoveanu (2003).

When applying these insights in stakeholder identification to standardization it should be noted that a standardization organization is in some respects different from a firm, resulting in a different stakeholder approach. In the first place, the principle of openness lies at the heart of standardization: all parties that have an interest in standardization are welcome to participate in the standardization process. This imperative of standardization implies that stakeholder identification should take a broad view, including all parties that may affect and that may be affected by the standardization process or the resulting standard. Secondly, the identity of groups and organizations affected by standards vary considerably. For instance, some standards are primarily related to producer-user relationships, while others mainly affect employees or certification institutes. This implies that the existing constellation of parties involved in standardization in a specific field does not necessarily cover all the stakeholders in a new standardization process. Stakeholder identification for standardization should therefore include stakeholders with actual as well as potential relationships to the existing standardization communities.

### **Part 1. Identifying stakeholders**

These considerations result in a broad perspective on stakeholder identification for standardization processes. In principle, all stakeholders should be identified that can affect and are affected by the standard or cluster of standards produced by the standardization process. In this project, we developed a list of nine search directions for tracing potential stakeholders. These search directions are based on the different ways in which a standard can be relevant to stakeholders. Obviously, not all search directions are equally relevant to all standardization processes. They should therefore be used as a checklist rather than a prescriptive instrument.

The search directions are illustrated by a case study of the revision of the British Code for Information Security Management (BS-7799: 1999), and the translation to Dutch of the revised version. The standard provides a wide range of measures that organizations can take to protect their electronically stored information. Measures include the implementation of an information security policy, the physical protection of information systems, and the training of personnel. Organizations that comply to the standard are not obliged to implement all these measures. Rather, implementing the Code implies that the organization makes a systematic analysis and selection of the relevant measures, and commits to implement this.

A first version of the BS-7799 was published in 1995. In 1997, the British Standardization Institute BSI decided to revise the standard because of developments in electronic commerce, mobile computing and third-party arrangements. The first part of the revised standard, containing the actual Code of Practice, was published in 1999. In 2000, this part has been adopted by ISO by means of a fast track procedure (ISO-IEC 17799:2000). BSI published the second part, called Information Security Management Systems, in 2002. A full revision of the complete standard by ISO is expected to be published in 2004 or 2005. In reaction to the 1999 revision of the BS-7799 the Dutch standardization committee on IT Security Technology re-established the significance of the Code, in particular for the improvement of information security in small and medium-sized enterprises. A working group was established to carry out the translation and adaptation of the Code.

The case of the development and translation of the British Code for Information Security Management will be used here to illustrate the method for stakeholder identification and classification. The nine search directions for identifying stakeholders are presented below.

1. *Production chain.* This search direction includes all firms in the production chain of the product that the standard relates to, from the producers of raw materials and parts suppliers to the firms that make the end product, the users and firms involved in the reuse, recycling or disposal of the discarded product. Also transporters, trade companies, and firms involved in service and maintenance are stakeholders in the production chain. The Code for Information Security Management does not relate to a specific physical product, so the production chain is relatively less important. Nevertheless, producers of IT systems and of physical protection devices can be potential stakeholders.
2. *End users and related organizations.* End users usually have a specific position in the production chain, which is why they are included as a separate stakeholder. Especially in the IT sector, but also in other sectors, end users play a major role in standards setting. Related to end user needs are other organizations, such as firms providing helpdesk services. Regarding the Code, this is a broad category of all stakeholders that are involved in the implementation and use of the measures described in the Code. These can be large companies, small- and medium sized enterprises, public organizations and individual employees.
3. *Designers.* The product that the standard relates to is in many cases designed by stakeholders that are part of the production chain. In other cases, however, separate, specialized companies such as architects design the product. In IT, in general, design and production come in one hand. For the Code, it should be investigated if there are dedicated firms that design IT security systems.
4. *Physical system.* For each step in the production chain the physical interactions with other technical systems can be analyzed. For instance, the chemical composition of a lubricant may affect the engine to which it is applied, and a new piece of hardware must be compatible with the other components on a personal computer. Hardware and software compatibility is also a relevant issue to the development of the Code. The technology and measures described in the Code should not affect the performance of the systems in which they are implemented. Also, a situation may occur where one company's products are compatible with the suggested measures in the Code, whereas the products of a competitor are not. For these reasons, stakeholders involved in the development and production of elements of the surrounding system, should be identified as potential stakeholders. Computer software and hardware producers are an important section of this stakeholder group.
5. *Inspection agencies.* The product itself, or its physical and organizational environment, will in many cases be subjected to inspection. Inspection may be carried out by the producer himself, the customer, or by a dedicated organization: certification bodies, testing laboratories, or governmental enforcement agencies. Many standards are used as direct or indirect guidelines for inspection. Regarding the Code for Information Security Management, certification is likely to become an issue in the inter-organizational exchange of sensitive information. Organizations may want to see their clients to be certified according to the Code before they enter this type of co-operation.
6. *Regulators.* Standards are often related to government regulation on a local, national or even international and global scale. Laws and other regulations sometimes refer directly to specific standards. In that case, regulators are directly affected if a relevant standard is revised. Their cooperation is also an important success factor. First of all standards should comply with existing regulations, and secondly, reference in formal regulation will boost the status and adoption of the standard. There are no plans for reference to the Code for Information Security Management in formal regulation in The Netherlands. Adaptation of the Code to the Dutch legal system was however an important issue in the translation process. Also, the development and dissemination of the Code was strongly

endorsed by both the British and the Dutch government, mainly because of the potential economic damage that can be caused by lack of information security. For this reason, the British Department of Trade and Industry and the Dutch Ministry of Economic Affairs should be seen as stakeholders belonging to this search direction.

7. *Research and consultancy.* Universities, research institutes and consultants have in many cases also a stake in standard setting. Standards influence technological innovations and, on the other hand, the standardization agenda is greatly influenced by innovations, see, for the example of mobile telecommunications, Beckers (2001). In many cases, co-normative or pre-normative research is needed in order to make trustworthy standards.<sup>3</sup> Consultants may have a special stake in creating complicated standards as this increases their work in assisting companies to implement these standards (De Vries, 1999, p. 29). In the Case of the Code for Information Security Management, potential stakeholders are academic, public and industrial research groups involved in relevant research fields such as encryption. Also IT consulting firms, especially those in the field of IT management, are potential stakeholders.
8. *Education.* Standards are frequently included in educational programs, both for students and for professionals. Organizations responsible for education have a specific interest in the accessibility and clarity of the standard. They can also contribute to the standard's diffusion by including it in educational programs. Information security management can be part of IT courses at universities and other educational programs. Therefore, representatives of these organizations should be seen as potential stakeholders. The Dutch national standards body has organized introductory courses about this Code. In this case, therefore, the NSB itself is a stakeholder.
9. *Representative organizations.* Some types of stakeholders have representative organizations that are dedicated to serve the interests of their members. Examples are labor unions, consumer organizations, professional organizations and branch of business organizations. These representative organizations are usually involved in standardization processes rather than their individual members. However, they should be seen as a separate category of stakeholders. The first reason for this is that the needs and objectives of the representative organization are not necessarily similar to those of their individual members. This holds especially for organizations that represent a heterogeneous stakeholder group, such as consumer organizations. Secondly, representative organizations are usually relatively independent in choosing their strategic position in standardization processes. Frequent consultation of their members regarding specific standardization issues does not always take place.

It should be noted that these nine categories serve as search directions when identifying stakeholders. A full listing of all the firms and organizations in each category is therefore not necessary, because not every category necessarily contains stakeholders regarding a specific standard. Some standards are more design oriented, while others primarily relate to the end use of products, or just the testing and certification. In other cases, for instance management system standards, the production chain is hardly relevant. The nine categories should therefore be seen as a search heuristic that enables standardization officers and others not to forget certain groups of stakeholders. The application of these nine search directions to the case of the Code for Information Security Management did show the value of using such a heuristic. A large and heterogeneous group of organizations, both public and

---

<sup>3</sup> The European standardization organization CEN, for instance, has established a special unit for bridging the gap between research and standards development, see <http://www.cenorm.be/sectors/star/mission.htm>.

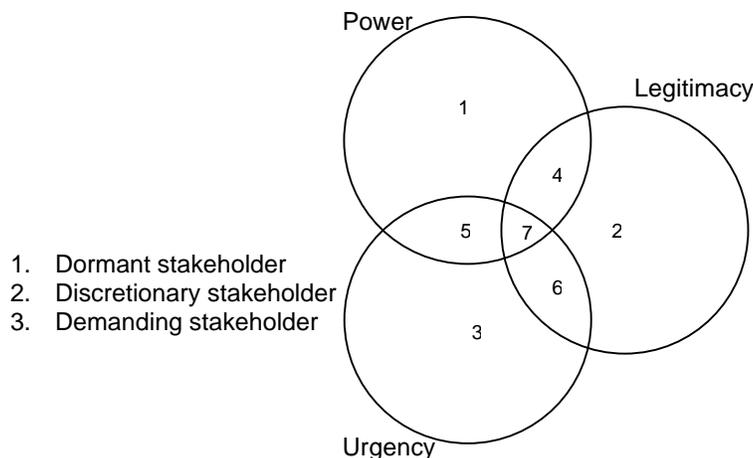
private, could be identified as potential stakeholders. Also, this range of potential stakeholders goes well beyond a circle of professionals involved in information security on a daily basis. Entering the standardization process with 'the usual suspects', without a systematic analysis of potential stakeholders, is bound to result in overlooking some stakeholder categories.

### Part 2. Determining stakeholder positions

The first step of stakeholder identification produces a 'long list' of stakeholders. In many cases this list will be extensive. The question is now how to deal with this list when attempting to involve these stakeholders. An equal, full representation of all stakeholders will in general not be desirable, both from stakeholders' perspective as well as from the perspective of the quality of the standardization process. All stakeholders have to be able to participate in the standardization process, but not every stakeholder will be prepared to put time and effort in the standard setting activities. Full stakeholder participation will also cause the process to be complex and time-consuming, which should be avoided if it does not contribute to the quality and legitimacy of the resulting standard. It is therefore important to determine the positions of various stakeholders regarding the standardization process. The level of participation and the effort put into stakeholder involvement can be adapted according to their positions.

For the determination of stakeholder positions we use the stakeholder typology developed by Mitchell et al. (1997). What sets this typology apart is that it is not based on characteristics of the stakeholders themselves, but on determinants of stakeholder salience –“the degree to which managers give priority to stakeholder claims” (Mitchell et al. 1997, p.87). Considering our objective to determine which stakeholders should participate in the standardization process, this is an appropriate starting point.

Mitchell et al. distinguish three variables in the stakeholder-firm relationship that determine stakeholder salience. The first is power, which they describe as the ability of one actor to make another actor do something he would not otherwise have done. Power is usually unevenly distributed among actors in a relationship. The stakeholder can have power over the firm (or, in our case, the standardization process and the resulting standard), or the firm can have power over the stakeholder. The second variable is legitimacy: the degree to which the firm and the stakeholder find each other's actions "(...) desirable, proper, or appropriate (...)" (Mitchell et al. 1997, p.102). The third variable is urgency: "The degree to which stakeholder claims call for immediate attention". Based on these three variables, Mitchell et al. define eight types of stakeholders; see Figure 1.



4. Dominant stakeholder
5. Dangerous stakeholder
6. Dependent stakeholder
7. Definitive stakeholder
8. Non-stakeholder

Figure 1. Stakeholder typology (adapted from Mitchell et al. 1997)

For each of these eight types of stakeholders, we analyzed the appropriate level of participation they have in the standardization process, and the effort that should be put into involving this type of stakeholders. The results of this analysis are presented below, and are illustrated by the case of the Code for Information Security Management.

1. *Dormant stakeholder (P)*. This stakeholder has power to affect the standardization process, but its participation is not considered legitimate and neither from the stakeholder nor from the standardization process the need is felt to participate. Dormant stakeholders should be monitored, however, in view of their potential to harm the standardization process. In case of the Code, large software firms may belong to this category. Due to the specific nature of the Code and the fact that many of the information security measures are not software related, participation might not be high on their agendas as well as those of the existing participants. Due to the compatibility issue, however, the strategies of software firms can affect the content and effectiveness of the Code.
2. *Discretionary stakeholder (L)*. Discretionary stakeholders do not have the resources to affect the standardization process, and feel no urgent need to participate. They do have a legitimate role in the process, however, which is recognized by the other participants or the future buyers of the standard. In this respect it may be useful to try to involve this type of stakeholder despite its lack of urgency. An example can be a research institute that is requested an expert opinion in the standardization process. Regarding the Code for Information Security Management, most small and medium-sized enterprises (SMEs) can be identified as discretionary stakeholders. Other parties involved in the development and translation of the standard are concerned with the lack of information security measures taken by SMEs, which may damage their own security level. Therefore the legitimacy of SMEs as a stakeholder is high. In the United Kingdom as well as The Netherlands, large companies and the government co-financed campaigns to increase SMEs' awareness of information security.
3. *Demanding stakeholder (U)*. Stakeholders without power and legitimacy, but with urgency towards the issue are referred to as "mosquitoes buzzing in the ears of managers" by Mitchell et al (1997, p.108). They will not receive more than a passing attention from managers. The same holds for demanding stakeholders in standardization processes. The typical example of this category is a firm that is represented already by its branch of business organization, but still insists upon individual participation in the standardization process. In the case of the Code for Information Security Management, no demanding stakeholders could be identified. This is mainly due to the fact that the subject was strongly endorsed by powerful stakeholders. There were no outsider organizations attempting to call attention to the issue of information security. For demanding stakeholders it is important that the parties already involved in the standardization process re-assess the lack of legitimacy of demanding stakeholders. It is possible that this stakeholder's demands or position require that they become involved in

the standardization process. If not, the stakeholder can be offered a kind of symbolic participation in order to stop their interference in the process.

4. *Dominant stakeholder* (P, L). Like the discretionary stakeholder, the dominant stakeholder itself does not see immediate interest in participating, while its participation is considered desirable from the perspective of the standardization process. Efforts to involve this type of stakeholder should be stronger, because dominant stakeholders also have the power to affect the process or the resulting standard. One way of involving this type of stakeholder is by relating the standardization process to other issues that are urgent to him. For instance, the development of one standard can be combined with the development or revision of related standards that the dominant stakeholder considers to be relevant. In many cases, governmental organizations appear to be dominant stakeholders. This is also the case in the Dutch adoption of the Code for Information Security Management. As the responsible government body for the internal management of Dutch government organizations, the Dutch Ministry of Internal Affairs did have apparent power and legitimacy. Urgency was lacking, however. The Ministry preferred to develop its own guidelines for information security management by government organizations.
5. *Dangerous stakeholder* (P, U). Mitchell et al. (1997, p. 110-111) state that stakeholders that have power and urgency but no legitimacy, will in general take unlawful and sometimes violent action to achieve their objectives. Computer criminals may count as dangerous stakeholders in the case of the Code for Information Security Management. Obviously, these stakeholders cannot be given a formal place in the standardization process, although an assessment of their strategies and capabilities must be taken into account when developing the Code.
6. *Dependent stakeholders* (L, U). The definitive stakeholders are important for the general support of a standard and they see the need to participate in the standardization process. In general, little effort will be needed to involve these stakeholders in the process, provided that the dependent stakeholders are aware of the process taking place. However, dependent stakeholders will in many cases lack resources to properly participate in the process. Financial support, access to technical expertise and other types of assistance will be needed in order to ensure their involvement. SMEs that do see the need of information security belong to this stakeholder category regarding the Code for Information Security Management.
7. *Definitive stakeholders* (P, L, U). Definitive stakeholders have the power to affect the standardization process, they consider the standard to be important, and their involvement is indisputable. Little effort is needed to involve these stakeholders; in general definitive stakeholders will already have a long-lasting commitment to related standardization activities and are the driving force of the standardization processes. In some cases, efforts should be directed to preventing these stakeholders to become too dominant in the process. Regarding the Code for Information Security Management, this stakeholder group consists of the large companies and government organizations that took the initiative to develop the Code. They have the financial and technological resources to contribute to its development; they recognize its significance as well as each other's involvement in developing the Code. It is no surprise therefore that the working group responsible for the Dutch translation consisted of these stakeholders.
8. *Non-stakeholders*.

This stakeholder typology enables a selection and prioritization from the 'long list' produced by the stakeholder identification step. The remaining question is, however,

how to establish the power, legitimacy, and urgency of a stakeholder. Regarding power, the central question is whether the stakeholder has the resources to affect the standardization process or the success of the resulting standards. Relevant resources are time available, financial position, technical expertise, and the position in the network of firms and organizations to which the standard applies. As for legitimacy, a distinction should be made between formal legitimacy –is the stakeholder formally entitled to participate in the process- and perceived legitimacy – do the other stakeholders accept or support the participation of this stakeholder in the process? Given the openness of formal standardization, almost every stakeholder is formally legitimate. The significance of the stakeholder's participation however largely depends on his perceived legitimacy. The urgency of a stakeholder can be estimated by looking at its recent actions in this field: has the stakeholder been active in pursuing his goals regarding this standardization issue? If this is the case, then the stakeholder may be expected to have a high urgency.

Finally, it should be noted that power, legitimacy and urgency are dynamic variables. For example, the legitimacy of stakeholders can change due to controversial decisions and activities. Also a stakeholder's power regarding standardization can diminish if its resources are redirected towards other activities. Determining stakeholders' positions regarding the standardization process is therefore not a one-off activity, but should be repeated regularly.

### **FIRST EXPERIENCES**

The above method of stakeholder identification for standardization was initially developed as a research tool for the ex post evaluation of stakeholder participation in past standardization processes. It has been applied in four case studies of standardization processes.<sup>4</sup> These case studies were aimed at identifying barriers for stakeholder participation in standardization processes in various sectors. To this end, a comparison was made between the full list of stakeholders and their positions, as found by applying the above method, and the actual participants in the standardization process. Subsequently, interviews with participants as well as other stakeholders have been held in order to investigate why some stakeholders, in particular those with high scores on power, legitimacy and urgency, did not participate in the standardization processes. This provided insight in the barriers for stakeholder participation in these case studies.

The method for stakeholder identification described above proved to be valuable in the case studies. The adequacy of the method is difficult to measure in absolute terms: we cannot prove that the method produces the complete list of stakeholders, and that their division in stakeholder types matches their exact empirical positions regarding the standardization process. We can, however, show the added value of the method relative to the stakeholder identification that took place by the standardization officials and committees in the case studies. In all four cases, we were able to identify additional stakeholders that had not been identified by the actors involved in the standardization process. In many cases, these stakeholders had not been taken in consideration at all, while interviews with some of these stakeholders learned that they would have been willing to participate.

---

<sup>4</sup> The cases that were investigated were: the revision of an ergonomic standard concerning office workplaces, the translation and adaptation of the British Code of practice for information security management, the Dutch input in the international standard for determination of release rate of biocides in antifouling paints, and the translation and adaptation of a standard concerning the qualification of welders. Case reports (in Dutch) are available with the authors.

Secondly, the stakeholder typology based on power, legitimacy and urgency also had an added value, especially in providing additional insights in the positions of stakeholders regarding the standardization process. In particular, the typology has provided additional insight in the position of 'weak' stakeholders such as trade unions, consumer organizations and environmental groups. These stakeholders are generally believed to lack power, and for that reason have difficulties in participating in standardization. However, in terms of the typology the main problem of these organizations appears to be lack of urgency rather than lack of power: they do not give priority to standardization and therefore do not use their power to invest in it. They have sufficient resources to participate in standardization, but these resources have to be divided between many issues, processes and networks. Whether sufficient resources are devoted to standardization depends largely on the urgency of the standardization issue.

In the third place, the method appears to be easy to apply. Master's students and junior project assistants carried out the four case studies, and they were able to apply the method to their case studies without major difficulties. We therefore expect that standardization officers and committee members will in general be able to apply the method. The ease of implementation is strengthened by the fact that the method does not have to be fully applied for each new standard to be developed or revised. The constellation of stakeholders in a certain field of standardization is relatively stable. However in some cases a full stakeholder identification exercise is needed. Examples are standards that are anomalous to an existing committee. If a standard deals with issues that are unusual to the committee, then probably the standard will also involve different stakeholders. Also, a stakeholder analysis should be included in a periodic evaluation of standardization committees. Especially in dynamic sectors like IT, the stakeholder positions may change over time. This calls for a regular check on stakeholder representation in existing committees and processes. Furthermore, if the standard deals with controversial issues or if it has a wide effect on many sectors, then a full stakeholder analysis is recommended. In other cases, the method can be used as to support a 'quick scan' regarding the stakeholder representation. We believe that standardization officers will also internalize the method if they apply it frequently. The method will then be used implicitly in other standardization processes as well.

These positive experiences with the method are confirmed by the fact that NEN, the Dutch standardization organization, has already started to use it to evaluate stakeholder involvement in standardization committees.

### **CONCLUSIONS AND DISCUSSION**

In this paper we presented a method for stakeholder identification to be used in standardization processes in general, which can be also used in the information technology sector. A secondary analysis of literature showed strong indications of unbalanced stakeholder representation in IT standardization processes. A systematic identification of stakeholders is a crucial first step in achieving an adequate representation of all stakeholders. The method presented here can contribute to this. It first generates long lists of all potential stakeholders, whose position towards the standardization issue is then analyzed. This second step makes it possible to differentiate between stakeholders whose participation is essential, and stakeholders that are dispensable. This increases the efficiency of activities to involve stakeholders in the process. First experiences with the method are promising; also the fact that NEN, the Dutch National Standardization Organization, has started implementation of the method indicates the method's relevance and potential.

However, applying a method for stakeholder identification will only contribute to a more balanced stakeholder representation in standardization if other barriers for participation are taken away as well. The research project for which our method had been developed showed that unbalances in stakeholder representation are not only caused by the difficulties in identifying stakeholders. One of the main barriers we found is the professional culture that dominates standardization processes. In that sense our cases confirm the findings of Schmidt and Werle (1998) and Mallard (2000). Standardization committees often consist of professionals sharing the same area of expertise. In general, they appear to perceive the standardization issue as a complex technical task, which needs to be executed in a project environment. This professional attitude is in line with the technical complexity of many standardization processes, but it conceals the fact that standardization is also a negotiation process in which stakeholders with various aims and perceptions attempt to realize their objectives. In many cases, insufficient attention is paid to stakeholder identification and involvement, simply because the participants are not aware of the importance of this. There are some exceptions (NSSF, 2003; Olshefsky & Hugo, 2003; Waloff, 1996), but these lack a systematic stakeholder inventory, let alone a categorization of stakeholders. We believe that adopting our method for stakeholder identification can also contribute to a shift within standardization committees towards more focus on stakeholders and their stakes.

We propose our method to be used at three occasions. First, before starting a new standardization committee, in order to get a balanced stakeholder representation in this committee. In our research project we found that the longer standardization committees exist, the more there is a danger that they just continue their work without paying enough attention to their external orientation. Standards are reviewed after a few – often five – years, but in general this is not done for the committees. In our project we therefore recommend regular evaluation of standardization committees and the stakeholder methods should be used in this evaluation to evaluate the committee composition. Both the committee's program and the market situation may have changed. The third way to use the method is less explicit: standardization officers should have the method in mind when a new work item is added to the program of an existing committee. They should ask themselves whether or not the new topic would be of interest to stakeholders not yet represented in the committee. In the case they expect more interest they or their committee members could take action to invite the missing stakeholders.

Although further research into its application options and effects, it appears that this method for stakeholder identification can contribute to the important task of increasing stakeholder participation in IT standardization.

#### **ACKNOWLEDGEMENTS**

This paper is based on a research project financed by the Dutch Ministry of Economic Affairs. The authors thank two anonymous reviewers for their useful comments.

#### **REFERENCES**

- ANEC (2003) *Consumer Requirements in Standardisation relating to the Information Society*. European Association for the Co-ordination of Consumer Representation in Standardisation, Brussels, 58 pp.
- Beaver, W (1999). "Is the stakeholder model dead?" *Business Horizons* March-April pp. 8-12.
- Bekkers, R. (2001) *Mobile Telecommunications Standards: GSM, TETRA, ERMES and UMTS*. Artech House, Boston, MA., 632 pp.

- Bowley, T.J and M. Moldoveanu (2003) "When will stakeholder groups act? An interest- and identity-based model of stakeholder group mobilization." *Academy of Management Review* 28, pp. 204-219.
- Cargill, Carl F. (1997) *Open Systems Standardization - A Business Approach*. Prentice Hall PTR, Upper Saddle River, New Jersey, 328 pp.
- Council of the European Communities (1993) Council Directive 93-37/EEC of 14 June 1993 concerning the coordination of procedures for the award of public works contracts. Office for Official Publications of the European Communities, Luxembourg.
- Dankbaar, Ben & Rob van Tulder (1992) *The influence of users in standardization: the case of MAP*. In: Meinolf Dierkes & Ute Hoffman (Ed.) *New Technology at the Outset*, Campus Verlag, Frankfurt am Main / New York, pp. 327-349.
- De Vries (1999) *Standardization – A Business Approach to the role of National Standardization Organizations*. Kluwer Academic Publishers, Boston/Dordrecht/London, 341 pp.
- Egyedi, Dr. T.M. (2001) *Beyond Consortia, Beyond Standardisation? – New Case Material and Policy Threads – Final Report for the European Commission*. Delft University of technology, Faculty of Technology, Policy and Management, 72 pp.
- Evans, C.D., B.L. Meek & R.S. Walker (1993) *User needs in information technology standards*. Butterworth-Heinemann Ltd, Oxford / London / Boston / Munich / New Delhi / Singapore / Sydney / Tokyo / Toronto / Wellington, 403 pp.
- Forey, Dominique (1994) *Users, standards and the economics of coalitions and committees*. In: *Information Economics and Policy*, Vol. 12 No. 6, North-Holland, Amsterdam, pp. 269-293.
- Freeman, R.E. (1984) *Strategic management – a stakeholder approach*. Pitman, Boston.
- ISO (2001) *Raising standards for the world – ISO strategies 2002-2004*. ISO, Geneva.
- ISO/IEC (1996) *ISO/IEC Guide 2: Standardization and related activities – General vocabulary*. ISO and IEC, Geneva.
- ITU (1992) *Constitution of the International Telecommunication Union*. ITU, Geneva.
- Jakobs, K., R. Procter & R. Williams (1998) *Telecommunication Standardisation – Do we really need the user?* Proceedings 6<sup>th</sup> International Conference on Telecommunications, ICT '98, March 29th-April 1<sup>st</sup>, Edinburgh, IEE Press, 1998.
- Jakobs, Kai., Rob Procter & Robin Williams (2001) *The Making of Standards: Looking Inside the Work Groups*. IEEE Communications Magazine, Vol. 39 No. 4, April 2001, pp. 2-7.
- Leiss, William (1995) *Stakeholder involvement in the administration of environmental standards*. In: R. Hawkins, R. Mansell & J. Skea (eds) *Standards, Innovation and Competitiveness – The Politics and Economics of Standards in Natural and Technical Environments*. Edward Elgar, Adershot, UK / Brookfield, US, pp. 50-61.
- Mallard, Alexandre (2000) "L'écriture des normes." *Réseaux*, 18, No. 102, pp. 37-61.
- Mitchell, R.K., B.R. Agle & D.J. Wood (1997) "Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts." *Academy of Management Review* 22, pp. 853-886.
- Naemura, Kenji (1995) *User involvement in the life cycles of information technology (IT) and telecommunication standards*. In: R. Hawkins, R. Mansell & J. Skea (eds) *Standards, Innovation and Competitiveness – The Politics and Economics of Standards in Natural and Technical Environments*. Edward Elgar, Adershot, UK / Brookfield, US, pp. 93-102.
- NSSF (2003) *National Standardization Strategic Framework*. NSSF, London.

- Olshefsky, Jim & Joe Hugo (2003) "Getting Key Stakeholder Participation." *ASTM Standardization News*, 31, No. 6, pp. 18-21.
- Rankine, L. John. (1995) *Do We Need a New Standards System?* In: Brian Kahin & Janet Abbate, *Standards Policy for Information Infrastructure*, MIT Press, Cambridge, Massachusetts / London, UK, pp. 564-578.
- Schmidt, Susanne K. & Raymund Werle (1998) *Coordinating Technology - Studies on the International Standardization of Telecommunications*. The MIT Press, Cambridge, Massachusetts / London.
- Spring, Michael B. et al. (1995) *Improving the Standardization Process: Working with Bulldogs and Turtles*. In: Brian Kahin & Janet Abbate, *Standards Policy for Information Infrastructure*, MIT Press, Cambridge, Massachusetts / London, UK, pp. 220-250.
- UNICE (1991) *Green paper on the development of European standardisation - UNICE Position*. Union of Industrial and Employers' Confederations of Europe, Brussels, 9 pp.
- Verheul, Hugo & Henk de Vries (2003) *Verbetering formele normalisatieproces*. Delft Rotterdam Centre for Process Management and Simulation, Delft.
- Waloff, Ingrid (1996) *Standardization and the views of stakeholders – A report on BSI's Standards' program of stakeholder research 1994 – 1996*. Proceedings CEN/CENELEC/ETSI Conference Standards on Trial, Brussels, 1996-11-5—6, CEN, Brussels.

#### **Authors' biographies**

**Henk J. de Vries** (1957) is associate professor standardization at the Erasmus University Rotterdam, Rotterdam School of Management, Department of Management of Technology and Innovation. Until 2003 he also worked at NEN – the national standardization institute of The Netherlands. He has 19 years standardization experience in assisting technical committees, training and education, research and development, and consultancy. Henk wrote more than 100 publications about standardization, including a dissertation.

See <http://web.eur.nl/fbk/dep/dep6/members/devries>.

**Hugo Verheul** (1969) is assistant professor public management at the Faculty of Technology, Policy and Management of the Delft University of Technology in The Netherlands and director of the Delft Rotterdam Centre for Process Management and Simulation. He publishes on process management, innovation policy, and the use of scientific expertise in policy-making. Besides that, Hugo Verheul has been project leader of many consultancy projects for various clients in the public and the private sector.

**Harmen Willemse** (1978) just finished his study business administration at the Erasmus University Rotterdam. His thesis concerns the application of various management models in standardization.