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## FEATURE ARTICLE

### STANDARDS STAKEHOLDERS: WHO SHOULD, AND WHO DOES, SET STANDARDS?

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**Abstract:** *The identification of categories of "stakeholders" (i.e., those individuals and entities that affect and/or are affected by the creation and deployment of standards) is an important tool for understanding many aspects of standard setting, such as why specific standards are created, why they turn out as they do, why some stakeholders participate and others do not, who standards affect in positive and negative fashions, and why. This article explores the concept of the stakeholder; describes a number of the categories of stakeholder that are most often discussed in the literature; identifies the motivations that each category has for participating in standard setting; gives examples of how and why those stakeholders that have the most at stake in the outcome of the standard setting process invest the most in affecting – and do in fact have the greatest influence over – outcomes; and what the effects of such disparities in influence have over those stakeholders that make a smaller, or no, investment in the standard setting process. It concludes by suggesting that standard-setting is a quasi-public function that supplements governmental regulatory power, making it incumbent upon SSOs to put in place mechanisms that ensure to the greatest extent possible the representation of the interests of all stakeholders in the standard setting process.*

**Introduction:** Standards are created by, and for, many constituencies. The great majority of the standards in use today have been created through voluntary consensus processes in which any stakeholder is entitled (at least theoretically) to participate<sup>1</sup>. But participation takes time and resources, and therefore the conviction on the part of the participant that the investment will eventually prove worthwhile. The not surprising results are that some constituencies are disproportionately represented in the standard setting process over others, and that those that are most active expect to reap the greatest and most immediate gains from their labors.

In consequence, the initiatives that are chartered in many standard setting organizations as well as the elements of the standards that result are often most heavily influenced by direct or indirect self-interest rather than by the judgment of disinterested standards professionals. That self-interest in the given case is likely to be enlightened only to the extent that widespread adoption is dependent on the willingness of other stakeholders (including competitors) to adopt the resulting standards.

In contrast, government regulations that include standards, at least nominally, are created with the best interests of all stakeholders in mind. Of course, lobbyists often exercise a potent influence, and the results of government rule making are therefore often substantially affected by the degree to which special interests may fear that they may be impacted by the results. But regulatory standards, while numerous, are not as pervasive as consensus standards, and are in any event concentrated in areas

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<sup>1</sup> A notable exception to this statement relates to information and communications standards, an area in which consortia, as compared to accredited standards development organizations (SDOs), predominate. While a significant number (and perhaps even a majority) of existing consortia permit all types of entities to become members, only a small number provide for meaningful participation by individuals.

such as health and safety, where governmental prerogatives or the perceived need for the safeguards of a public process are deemed to control.

The result is that the majority of the standards that increasingly enable or limit what we can do (e.g., surf the Web), buy (e.g., mobile devices with increasingly varied features), enjoy (e.g., electronic media) and use (e.g., home networks) are the product of a process that affects all, but is controlled by a comparative few, nearly all of whom opt-in through self-appointment rather than election through a democratic process.<sup>2</sup>

In this article, I will describe some of the principal categories of stakeholders that are affected by standards, the degree to which each participates in the standards development process, and some of the results that flow from this varying degree of participation. The standards in question are those that are created by accredited standards development organizations (SDOs) and those non-accredited, but still consensus-based, open-membership organizations that are most commonly referred to as consortia. Together, SDOs and consortia are referred to below as "standard setting organizations," or "SSOs."

**Stakeholders:** Students of standards commonly refer to discrete types of "stakeholders" in the context of the development and use of standards. One often cited definition of that term with respect to the work product of a given SSO is, "Any group or individual who can affect or is affected by the achievement of the organization's objectives."<sup>3</sup> Identifying a category of stakeholder, however, is an easier task than deciding how that stakeholder should be persuaded to become involved in a given standard setting process, what influence it should have, and what investment it should be required to make in order to support the process.

**Rights of participation.** There is disagreement in the trenches over what obligation an SSO has to include (or even identify and recruit) all categories of stakeholders into the standards development process. Among SDOs, the right of all stakeholders to participate is enshrined in the definition of "openness" (and therefore in the definition of what constitutes an "open standard"). In contrast, consortia are aware that consumers (for example) are impacted by standards, but rarely feel any obligation to include them in their development process, or to consider their needs in any way other than through market research, with the goal of maximizing the sale of products and services that implement the standards that they create. Differences also exist as among SDOs, with European SDOs generally placing greater emphasis than SDOs in many other parts of the world on taking (to continue the same example) consumer concerns into account in the development process.<sup>4</sup>

Actually persuading all nominal stakeholders to participate, however, is another matter. As a result, even those accrediting organizations that mandate participation by all relevant stakeholders must be realistic and recognize that full participation of necessity must often be an aspirational goal rather than a strict requirement. Still, absent ongoing diligence in recruitment, long-lived standards committees can increasingly become a club numbering only familiar faces among the members, leading at times to the development of standards that are insufficiently attractive to inspire meaningful adoption.<sup>5</sup>

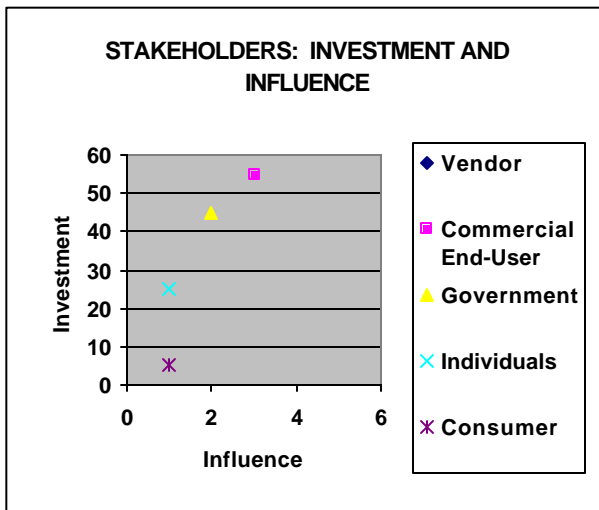
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<sup>2</sup> At the organizational level, participation in both accredited and non-accredited standard setting organizations (SSOs) is determined by the rules of the organization, and may allow (or not) participation by individuals and/or representatives of companies, government agencies and/or universities, all of whom opt in by choice rather than being appointed as representatives of their category of stakeholder. Accredited organizations are required to be broadly representative, and have less flexibility regarding who may be excluded, in comparison to consortia, which have no such constraints. Above this first organizational level in the world of accredited standards, however, participation is by national representative. In ISO, for example, the generally recognized national representative SDO from each country is permitted to participate, while in the ITU, the agency or other entity designated by the federal government of a given nation is admitted as becomes the representative of that nation.

<sup>3</sup> Freeman R.E. (1984) *Strategic Management – a Stakeholder Approach*. Pitman, Boston, p. 46.

<sup>4</sup> Fabisch, Gottlobe. *Consumers and Standards: Consumer Representation in Standards Setting*. [full cite] at < >

<sup>5</sup> de Vries, Henk, Verheul, Hugo and Willems, *Stakeholder Identification in IT Standardization Processes*, Standard Making: A Critical Research Frontier for Information Systems MISQ Special Issue at <[www.si.umich.edu/misq-stds/proceedings/132\\_92-107.pdf](http://www.si.umich.edu/misq-stds/proceedings/132_92-107.pdf)>, .



**Typologies:** Just as there is a range of opinions over whether, and how hard, an SSO must try to attract all stakeholders to the standard setting table, there are also many different typologies that have been developed to categorize stakeholders themselves, depending upon the research goals of the author advancing each scheme. For example, a team of Dutch authors has proposed a nine category typology focusing on those affected by standards for use in identifying the groups that should be invited to participate in a specific standard setting activity.<sup>6</sup> Another team that is interested in quantifying the value (and threat) of participation by potential participants with particular relationships to any given SSO has created an intriguing and elegant three-field schematic that separates stakeholders into three main categories that, through overlapping, net out eight distinct types of stakeholders.<sup>7</sup>

The high-level categories of stakeholder that I will identify for current purposes are intended to be useful in comparing the motivations of each group for participating in standard setting with the impacts that such activities can have on the same group. Each of these groups has a discrete, and to at least some degree different, set of interests in the outcome of the standards development process. And, as we shall see, the value proposition and immediacy of interest – and therefore the desired level of participation and influence over results - of those in each of these categories varies widely. These groups are as follows: *vendors, commercial end users, government entities, individual practitioners* of the technology in question, *universities and academics* and *individual consumers*.<sup>8</sup>

Each of these categories, of course, can be extensively subdivided into subgroups, but below the levels just identified the distinctions among such subgroups will largely be matters of detail rather than current interest.<sup>9</sup>

Because of these differences, each stakeholder group warrants examination. The following descriptions are presented in what is roughly the descending order of participation and influence among the categories of stakeholders selected for discussion.

**Vendors:** Broadly speaking, individual vendors have the most to gain, as well as the most to lose, by the development and broad uptake of a given standard. As a result, vendors generally have the greatest incentive among all categories of stakeholders to dedicate the resources needed to exercise influence on standards development, and that influence can involve blocking and undermining the

<sup>6</sup> Ibid., , pp. 97-100.

<sup>7</sup> See, Mitchell, R.K., Agle, B.R. and Wood, D.J. (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.

<sup>8</sup> The degree to which each of these groups has been examined in the literature varies, in part with the degree of interest they represent to the types of authors that are drawn to the study of standard setting, and in part due to the disparate level of participation of each group. For example, economists are quite interested in the interplay between vendors and consumers, but are much less intrigued by the individuals that participate in standard setting of their own volition rather than as proxies for their employers. Nonetheless, such individuals do have a substantial impact in some types of standard setting, as well as on emerging kindred efforts, such as the development of open source software.

<sup>9</sup> For example, under the general category of "vendors," one could identify the subcategory "telecommunications," which in turn would divide into land-line, wireless, satellite, etc., and then into individual categories of services and products. With respect to each product category, there would be hardware vendors, software vendors, and others with a particular interest in a specific standard. But at each of these increasingly granular levels, the degree of participation by other stakeholder groups would commonly remain essentially the same.

standard setting process as well as supporting and promoting it. Some of the factors that lead to this state of affairs are as follows:

- **Interchangeability:** The advent of the production line in the early 20<sup>th</sup> century dramatically reduced manufacturing costs, making feasible the purchase of less expensive products that could be purchased by an expanded pool of potential customers. But production lines such as those utilized in the automotive industry required interchangeable parts, and manufacturers soon found that many of those parts could often be purchased more cheaply from others than produced by themselves. The ability to buy parts from third parties at competitive prices required a pool of such parties, the development of which could be facilitated by the creation of standards – which in turn provided incentives for more automotive manufacturers to buy parts instead of build them, creating a larger pool of potential purchasers and lower prices as a result of economies of production scale.<sup>10</sup> Not surprisingly, this new dynamic entered the system at the most elemental level, with the standardization of the threads and gauges of nuts and bolts, and worked its way gradually up the manufacturing chain in levels of complexity of standardized components.
- **Creating and expanding markets:** Many types of products and services, such as those that are dependent on the development of broad networks, would not be salable in large numbers (or, in some cases, at all) without broad agreement on standards. The decision makers that must be persuaded to set such a standard are sometimes limited in number, as with the setting of railway gauges, which involves only the owners of the railways themselves (manufacturers of rolling stock would benefit from standardizing gauges at any width), and in some cases the government, as the motivating agency. On the other hand, the members and classes of decision makers can be quite numerous and diverse, as is the case with video data formats, which require the buy-in of multiple types of vendors to ensure success, from those that own the original content, to those that manufacture the playback devices, to the retailers that stock those devices, to the supply chain participants (retail and rental) that provide compatible content to the end user. In each example, the ability to dramatically increase usage and volume, whether it be of freight, passengers, next generation DVD players, or replacement copies of last generation format movies, depends on achieving broad agreement on the elements of the necessary enabling standards, at the outset, and then broad adoption of those standards and the products that instantiate them at the end of the process.

The opposing strategy is to attempt to create a proprietary standard that enables a sufficiently large share of (perhaps) a smaller market, or license fees reaped from a larger market that is based upon the proprietary standard. While historically some types of networks (and therefore monopolies) could be created locally, such as the first railways more than 100 years ago, or within single customers, as with proprietary computer systems more recently, the situations in which this type of market strategy could be expected to succeed have become less numerous, while the size of many potential markets that can be shared to mutual advantage has increased dramatically.

Still, the creation of a monopoly or a significant proprietary market share remains an attractive goal to those that are able to achieve that result.<sup>11</sup> As a result, while many vendors may work diligently in their self interest to enable a non-proprietary network, either to create a new market or to attack the monopoly position of a competitor, other vendors that wish to create, or preserve, a proprietary market share can be expected to work just as aggressively, or more so, to defeat the effort.

- **Influencing outcomes:** There are many ways for an individual vendor to disproportionately gain as a result of the specific elements that are included in a final standard. At the most obvious level, there are royalties or other fees to be reaped from licensees of the patents that may be

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<sup>10</sup> Shapiro, Carl and Varian, Hal R., *Intro for Managing in a Modular Age*. School of Information Management and Systems (SIMS), University of California, Berkeley (2000), p.1, at <http://www.sims.berkeley.edu/~hal/Papers/modular.pdf>

<sup>11</sup> The Apple iPod music format and associated data rights management (DRM) are a current and successful example of this strategy.

"necessarily infringed" by an implementation of the standard. This result can be overtly achieved by submitting text for inclusion in the standard, or more subtly accomplished through comments made during the course of the standards development process. Vendors may also form alliances inside or outside the developing body to increase the likelihood that their material will be included in the finally adopted standard.<sup>12</sup>

There are many more secondary benefits that a vendor may gain, often leading it to make even patented technology available at no cost, and not infrequently waiving its rights to require non-monetary license terms as well. These potential advantages include gaining a head start in the market place, making the licensing of non-essential patents attractive to implementers, or influencing the market's likely future development to be more consistent with the vendor's product strategy.

***Mode and degree of participation:*** For all these reasons (and others), many vendors in many market niches have come to associate a high level of priority to influencing the development of standards. Not surprisingly, they therefore commonly comprise the largest single constituency in SSOs, and their investments in standard setting, regardless of the type of SSO involved, tend to be greatest.<sup>13</sup>

The resources dedicated to standard setting are most visible in consortia, where the top level of membership dues is typically in the \$10,000 to \$50,000 range, and can even reach \$1 million in the most ambitious and strategic efforts. Membership in the top category of such multi-tier organizations includes all committee participation and other privileges of lower classes, plus an added and significant perquisite: the right to either place a representative on the Board of Directors (or other ruling body), or at least to be part of a small pool of members entitled to parcel most, or all, of the seats on the governing council among them.<sup>14</sup> It is this membership category, therefore, that has the right to plot the strategic direction of the consortium and decide which standards efforts will be commissioned (and which not).

For an SDO, the investment can be as significant, but effected in different ways. For example, in the IEEE, membership is by individuals. But there has been a history in highly strategic areas, such as wireless standards, for vendors to dedicate significant resources to the creation of auxiliary organizations to promote the standards developed within IEEE working groups, as well as to create test suites to certify implementations of those standards. The budgets for such efforts can be large.

As earlier noted, however, the influence of vendors can be both positive and negative, as some vendors may benefit from the successful creation and adoption of a standard, while others (such as a market incumbent) may be threatened by the same result. Similarly, while on one level all vendors will benefit from the "best" standard being adopted, since it may lead to a larger market developing more quickly, what is "best" for one vendor in other respects may be less so for another, based upon a number of factors unique to that vendor.

Of course, effective participation in standards development takes up the time of valuable personnel as well as underwriting related expenses, such as travel expenses and membership fees. In consortia, such fees can be quite substantial at the highest levels of membership, which frequently include superior, or exclusive, rights to board membership. Those that can afford to make this investment therefore have a

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<sup>12</sup> A current example can be found in the multiple 802 family of wireless standards being set by the IEEE. See, Andrew Updegrave, *Standards Wars: Situations, Strategies and Outcomes*. ConsortiumInfo.org, Consortium Standards Bulletin, Vol. V, No. 3 (March 2006), at <http://www.consortiuminfo.org/bulletins/sep05.php#feature> > and sources cited therein.

<sup>13</sup> For example, in one study of ISO, ITU and IETF (Internet Engineering Task Force) working groups, 60% of all participants represented product vendors or service providers. See Jakobs, Kai, Proctor, Rob and Williams, R. *The Making of Standards: Looking Inside the Working Groups*. IEEE Communications Magazine, Vol. 39, No. 4 (April 2001), p. 207.

<sup>14</sup> More enlightened consortia, such as those that the author helps form, offer (at least when his advice is heeded) some number of Board seats to other classes of stakeholders with smaller participation budgets, in order to ensure balance and input from a variety of perspectives, with the nature of those viewpoints depending upon the organization and its goals. The interests that may warrant such special attention may be by geography, or industry sector, or category (such as end-users), or industry role (e.g., independent software vendor), or even by size of company. An added benefit is the credibility that such openness can provide to the standards created by the SSO.



market advantage over those that cannot, as well as over those that can, but do not choose to participate. The result is to magnify the ability of larger companies to act as leaders across a range of products and services, with more strategic options, and to relegate smaller companies and larger companies that are not as sophisticated in their standards strategies to the role of followers, with less freedom of action.<sup>15</sup>

**Commercial end-users:** Corporate purchasers make enormous investments in standards-based products. As a result, some end-users take an active interest in some types of standards at the time of creation. Because end-users usually have no economic stake in the particular technology chosen to embed in a standard (legacy issues aside), however, they have more of an interest in developing the "best" standard than do many vendors, whose motives on that question may be mixed, or circumstantially biased.

The motivations that influence commercial end-users to become involved in standards development include the following:

- **Securing the cheapest products:** While end-users do not usually hope that their patent claims will be infringed by a final specification, they do have concerns over the potential for inclusion of any one else's patent, if that would lead to higher prices or onerous non-economic licensing terms for the products that end-users hope to purchase. Consequently, when the intellectual property rights (IPR) policies that a given SSO operates under are drafted, vendors will usually want the policy to permit royalties, while end-users will desire, at minimum, the disclosure of necessary claims at an early enough point in the process to "design around them," if possible. Similarly, in the information and communications technology (ITC) sector, end-users may in the future become increasingly interested in pushing for IPR policies that would permit the creation of open source software products that can then implement the standards developed by the SSO.<sup>16</sup>
- **Influencing the technical outcome:** Just as vendors may have a desire to include specific features in a given standard, commercial end-users will as well. In some cases, the interests of vendors and end-users will converge, as with ensuring backwards compatibility with existing products and standards, while in others they will diverge. For example, end-users as a class will wish that the "best" technical result be achieved, but, like vendors, will usually disagree to at least some extent among themselves and among other categories of stakeholders over what "best" means in a given situation.<sup>17</sup> Individual end-users may also have unique requirements that they wish to see included in a standard that other end-users or categories may have no interest in including, or may actively oppose due to the tradeoffs in other areas that such inclusions may require.

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<sup>15</sup> The economic consequences of being a follower or a leader, of course are more complex. Leaders have significantly higher standards-related overhead, since the largest IT vendors (for example) actively participate in more than 100 (and indeed as many as 300) SSOs. Similarly, a market leader may be tempted to adopt a more high risk strategy based upon pushing its proposal in a standards process, or launching a competitive standards effort through a new forum, in order to sell compliant products sooner than its smaller competitors. As a result, it may be an early adopter of what proves to be the losing standard, while its smaller and less sophisticated rivals may delay implementation until the winning standard becomes apparent – a less risky strategy, as it involves less up-front cost, and a higher assurance that its costs will be rewarded, albeit perhaps at the expense of acquiring a smaller market share of sales in compliant products.

<sup>16</sup> After a very lengthy process, OASIS adopted a new IPR policy in the spring of 2005 that included three rule sets that a given technical committee could adopt to control the standard that resulted from its efforts. One of those sets of rules was intended to facilitate the use of the standard in open source software. It is significant to note that this result was secured with the concurrence and support of large vendors, many of which now place a greater value on open source software support revenues than on patent licensing income.

<sup>17</sup> The "best" result is an extremely subjective and situationally variable concept that will frequently involve balancing attributes that are to some extent mutually exclusive. Such variables can include not covering too much or too little, weighting backwards compatibility against making a dramatic leap forward in capabilities, speed of execution of products (as in the IT industry) against richness of features, maximizing interoperability versus limiting innovation, likelihood of easy adoption as compared to highest utility, and many more.

- **Gaining a first look:** End-users need to integrate standards into their purchasing decisions, which often have long lead times. It is not in their best interests to leave a standard out of their planning that may become ubiquitous during the lifetime of a purchase, since this may render the purchase obsolete or require expensive patching. Through participation, end-users can gauge the value to them of a given standard, as well as its likelihood of adoption (and by whom).
- **Training:** Participation in the standards process, as well as in the affiliated training programs that many SSOs provide, offers a way for staff to become knowledgeable about standards in order to better inform their exploitation of those standards, both as they are supported in the products they purchase as well as in their own internal design and development activities.

***Mode and degree of participation:*** Since commercial end-users have less interest in the specific result of a given standards development process than in the quality of the result, however, they have a lower incentive to participate in the process than do many vendors. Nevertheless, many SSOs are very interested in acquiring them as members. This arises from three principal motivations: first, end-user members provide economic support through membership fees. More significantly, however, they provide real-time market input regarding the requirements that customers will wish to see satisfied in order to find value in the products that support the standards that the SSO develops. And finally, they represent the "first adopters" that credential the results and provide momentum in the marketplace for wide implementation of the standards in question.

The challenge for an SSO is to provide a value proposition that gives incentives for commercial end-users to join, particularly when the SSO has been recently formed and its influence is still to be demonstrated. In a consortium, this typically entails providing multiple classes of membership at multiple prices, so that all types of stakeholders can find one that matches their budget and desires.

In the case of commercial end-users, there is less of a felt need to influence the development roadmap that a given SSO may adopt for its efforts. In consequence, when end-users do participate in SSOs that scale membership rights with the dues that they are required to pay, they frequently do so at less influential and less expensive levels of membership. Typically, some end-users will look for a membership category that offers voting rights on standards (this would include those that wish to influence the technical result), or a cheaper, non-voting level that still permits hands-on participation in the standards process (which appeals to those that are more interested in a "first look" and in training).

SSOs that are creative may go a step further. For example, the Object Management Group (OMG) restructured itself some years after its initial formation to enable "domain" memberships, providing greater influence at lower cost for commercial end-users within their specific industries (e.g., insurance, transportation, and so on). Other SSOs have formed Advisory Councils or other non-membership structures that can bring commercial end-users into the standards development process to mutual advantage.

On rare occasions, commercial end-users have countered the prevailing vendor-controlled "push" environment by forming "pull" consortia of their own. One early example of this strategy was the CAD Framework Initiative, formed in the 1980s (and now dissolved), which was formed by major CAD users to create specifications for the tools that they wanted CAD software developers to design and sell. By agreeing on common purchasing requirements, they provided incentives to vendors to create what the individual consortium members would otherwise have needed to internally develop or to pay the vendors to create on a custom basis. More recently, the [Jericho Forum](#) was formed in the United Kingdom with the goal of setting the security standards that its members wanted vendors to meet when they offered products for sale.

Another type of end-user effort is the standard setting buying collaborative, which not only lowers direct costs through volume purchasing, but may, through developing or referencing standards, also lower administrative costs of fulfillment. The [Coalition for Healthcare eStandards \(CHeS\)](#) is an example of this type of end-user driven initiative, which sets standards that facilitate the acquisition of acquiring hospital supplies.

**Government entities:** The interests of government members are in many respects the same as those of other end-users. However, the purchasing power, sometimes-unique requirements, and public obligations of this group, among other differentiators, entitle them to consideration as a separate category.

At the same time, the government entity category is not monolithic, and the attributes that the various types of extant public bodies share are offset in part by the substantial differences that exist among, as examples, federal agencies, state municipal governments, public libraries, and the armed forces, even within a single country. Given that standards in many categories aspire to global adoption, these divergences are compounded at the international level: In addition to local variations in laws and custom, there are differences in modes of participation and integration as among nations, with some countries setting standards through federal or quasi-public agencies, and others (such as the United States) allowing the market to choose the standards to create and the pace, mode and host organizations for development. Finally, some countries closely integrate standard setting into their national trade strategies while others do so to a lesser degree, or only episodically.<sup>18</sup>

All that being said, there remain valid generalizations to be made about this diverse constituency:

- **Purchasing:** Governmental entities have not only the same concerns noted above with respect to commercial end-users, but enormous purchasing power as well. Unlike all but a few commercial end-users,<sup>19</sup> some single government entities, such federal agencies and large individual states, can wield this power. As a result, whether or not a given governmental agency or other entity decides to participate in a given SSO, its procurement requirements may influence what the vendors in that SSO decide to do. When the decision is to buy in the market, for example, by purchasing standards-compliant COTS ("commercial off the shelf software"), this endorsement of an existing SSO standard can strengthen that standard. Similarly, if the same agency includes a "government unique" specification in its procurement notice, then the existing standard may be weakened, if the government is the dominant customer.<sup>20</sup>
- **Regulatory requirements:** Government entities are subject to a variety of regulations that vary from country to country and which relate to such topics as competitive bidding, supporting domestic commerce,<sup>21</sup> and using standards developed or approved by various bodies. In some cases, as in the United States since the enactment of the NTTAA in 1996, the type of standard (e.g., *de jure* or *de facto*) to be utilized is not specified, and that decision is left to the individual agency. In other cases, as in many governmental venues in Europe, reference is to standards that have achieved global recognition through adoption by bodies such as ISO, IEC and ITU. There are also less familiar but equally influential standards bodies, such as the [Codex](#)

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<sup>18</sup> For an example of differences in national standard techniques and strategies, see: Updegrove, Andrew, *Top Down or Bottom Up? A Tale of Two Standards Systems*. ConsortiumInfo.org, Consortium Standards Bulletin, Vol. IV, No. 9 (September 2005) at < <http://www.consortiuminfo.org/bulletins/apr05.php#trends>>, and sources cited therein.

<sup>19</sup> Wal-Mart is a notable exception to this statement on an across the board basis, and other purchasers can have a significant impact in specific product spaces. A recent example of Wal-Mart's significant impact on standards is the degree to which its decision to require its top 100 suppliers to utilize RFID tags dramatically accelerated the credibility of that standardized technology. Wal-Mart's decision, and a similar announcement made not long after by the United States Department of Defense, immediately increased the interest of vendors in committing to the development of products based upon RFID standards.

<sup>20</sup> The use of government unique specifications in procurement was dramatically curtailed at the federal government level in the United States ten years ago by the passage of the National Technology Transfer and Advancement Act of 1995 (NTTAA), which required the federal agencies to (a) use available market standards when they were appropriate and available, (b) support and participate in SSO standard setting, and (c) report annually to NIST on their progress in implementing the TTA. See: Updegrove, Andrew. *A Work in Progress: Government Support for Standard Setting in the United States: 1980 – 2004*. ConsortiumInfo.org, Consortium Standards Bulletin, Vol. IV, No. 9 (September 2005) at < <http://www.consortiuminfo.org/bulletins/jan05.php#feature>>, and sources cited therein.

<sup>21</sup> Using standards solely for the purpose of favoring domestic commerce at the expense of international competition is forbidden under the World Trade Organization's Technical Barriers to Trade Act



Alimentarious (which sets food standards). More recently, some governments have begun focusing on types of standards (e.g., those that do not require the payment of royalties), and standards related tools, such as open source software in addition to traditional criteria. For example, some governmental agencies in Europe have begun requiring purchasing of open source software, and Massachusetts became the first state in the U.S. to require procurement by its Executive Agencies of only those products that support a very high degree of openness.<sup>22</sup>

Where such requirements exist, they can create a powerful incentive for other stakeholders (and particularly vendors) to create standards that meet the requisite demands of government purchasers, and to choose SSOs as hosts for development activities that are best suited to create standards that will receive speedy and sure adoption at the requisite ultimate level of approval.<sup>23</sup>

- **Specific Requirements:** Governments sometimes have specific needs or agendas that may lead them to provide funding of a type that is not otherwise commonly available to support standards related work. In the United States, such support may (for example) come from agencies such as the Department of Agriculture or the National Aeronautical and Space Administration (NASA), each of which has provided funding for initiatives in geospatial information systems standard setting.

**Mode and degree of participation:** In addition to having somewhat different interests and goals than commercial end-users, government end-users also operate under additional constraints beyond those already mentioned. Those constraints (which vary by type of entity and country) can include budgets available to permit participation and regulations involving conflicts of interest and involvement with private industry. The net result of these and other constraints is that when government end-users join multi-tier consortia, they rarely wish to become members at a top level, since the active exercise of the control elements that frequently provide the greatest differentiation from lower classes of participation are neither desired nor, in some cases, permitted to such members by the regulations to which they are subject. Instead, government end-user members typically participate in such organizations at a level that is entitled to participate in the technical process in a voting or non-voting capacity.

Where participation by government is considered to be highly desirable by an SSO, lower dues for equivalent privileges are often charged to such members than for commercial members, due to the fact that many government end-users are unwilling or unable to pay commercial-level dues.

**Individual practitioners:** In some influential SSOs (such as the IEEE), membership is at the individual level, and the cost of membership is modest. Where individuals participate at the direction of their employers in developing standards that are highly strategic for their companies, their goals are largely synchronous with those that pay for their participation (at least when they are willing to act as expected). But where participation is voluntary, whether or not supported by their employers, individual motivations include the following:

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<sup>22</sup> See the articles in the September 2005 issue of the Consortium Standards Bulletin, Vol. IV, No. 9 (September 2005) at < <http://www.consortiuminfo.org/bulletins/sep05.php>>, and particularly *Massachusetts and OpenDocument: A Brave New World?* at < <http://www.consortiuminfo.org/bulletins/sep05.php#feature>>.

<sup>23</sup> A current example of this dynamic is provided by Microsoft's race to gain ISO adoption for its Open XML reference schema, which is tailored to Microsoft Office. After Massachusetts announced that its Executive Agencies would only purchase office productivity software that met a high test of openness, and that OpenDocument Format (ODF), a standard developed by OASIS, met that test while Microsoft Office did not, Microsoft decided to seek adoption of its XML Reference Schema as a standard. OASIS had already submitted ODF to ISO for adoption, after waiting the required six months to become eligible as a Publicly Available Standard (PAS) submitter. Presumably, in part as a result of ODF's head start, Microsoft chose Ecma, a European SSO that was already qualified as a PAS submitter, as the SSO to host the first process step leading to the achievement of the hoped-for final goal of adoption by ISO. By choosing a pre-approved SSO, Microsoft avoided being behind ODF by a further six months in its effort to achieve parity in legitimacy for its schema. To follow the entire saga, see the many entries in Updegrave, Andrew. *The Standards Blog/OpenDocument*. ConsortiumInfo.org, at <<http://www.consortiuminfo.org/standardsblog/index.php?topic=20051116124417686>>

- **Professional satisfaction:** Many individuals in some SSOs participate purely out of professional interest in the subject matter of the projects in which they enroll. But while such participants may be more neutral from a commercial perspective, they are also free to be as opinionated or eccentric in their beliefs as they may wish to be.
- **Training:** Participation in many organizations that set standards provides an opportunity to learn new skills and polish old ones.
- **Networking:** Participation in standards development can further many goals, not all of them technical. In today's more dynamic and mobile marketplace, career advancement and pragmatic insurance against protracted unemployment are logical motivations for getting to know potential employers in a sanctioned setting. Similarly, chairing a technical working group can add a worthwhile credential to a technical resume.

***Mode and level of participation:*** While vendors can (and certainly do) instruct their employees to become active participants in work groups of interest to their employers, any other individual that wishes to participate on their own initiative is free to do so as well. Of course, an employee whose travel is paid for, whose schedule is lightened to accommodate serious participation, and whose bonus and advancement at work may be dependent upon her effectiveness in that participation, may be both able and motivated to have greater impact than someone participating on his own nickel and free time.

At the same time, the percentage of company-sponsored active participants will vary from working group to working group. Similarly, not all employer-supported participation is controlled from the top, and individual employees may often therefore be voting their technical conscience.

Historically, individual engineers and others may have played a larger role in some standard setting areas when the standards being created were more utilitarian and less strategic. As the specific outcomes of standard setting in such industries have become more determinative of the success or failure for individual vendors, however, such entities have become less willing to leave outcomes to chance, and are likely to concentrate more resources on staffing standards development activities and in lobbying for the success of their favored candidate specifications.

An interesting parallel to this dynamic is currently occurring in the area of open source software. Initially, individual engineers working in their spare time via the Internet performed all work. As more vendors began to adopt strategies based upon providing support, integration, or other services based upon open source products, however, they directed more employees to become volunteers in such projects on company time, and also created or supported open source projects of their own. Today, the greater part of the code contributed to some open source projects comes from such employees, while in others, the original model still prevails.

***Universities and academics:*** The interests of the two groups are in some ways different, and in other ways aligned. Universities, after all, are substantial consumers of standards in all aspects of their operations, from the scientific instruments in their labs, to the building and operations of their physical plants, to their extensive IT systems, and more. Academics, in contrast, are more likely to be interested in the research and development of technology and the standards that will be needed to deploy those standards – which, of course, is also a part of the interest of the universities that employ them, bringing the two interests back together once again. Hence, non-academic and academic employees of the same institution may participate in SSOs in ways that are basically the same as commercial end-users, as well as in ways that are more similar to representatives of (for instance) NASA or the National Institute of Technology and Standards (NIST).

***Mode and degree of participation:*** Like some other categories of stakeholders, universities and their professors are not likely to be interested in paying for high-priced memberships when the development activities of interest are being conducted in consortia. At the same time, however, the participation of university members may be highly desirable to SSOs, due to the level of expertise, credibility and other resources that such members can bring to the process in some disciplines. As a result, high-priced consortia often charge university members lower fees for rights equivalent to those provided to for-profit members.

As with most other non-vendor stakeholders, university members rarely have an interest in paying a premium to enroll as a member of a class that includes strategic control of future direction.

**Consumers:** In many ways, consumers are the most broadly impacted type of stakeholder (since they are the least able to adapt, work around, or supplement the failings or inadequacies of the standards upon which their world is based). The following is only a sampling of those standards-related aspects of product design that may receive insufficient attention on behalf of the consumer as a result of the absence of that class of stakeholder as a participant in the standards development process:

- **Solutions, as compared to products:** While vendors are in the business of creating specific goods, their motivation is not so much to create those goods in particular, but to sell whatever goods in their field of competence they believe will deliver the highest returns at the lowest risk. As a result, the motivation of vendors only roughly aligns with the interests of the customer.<sup>24</sup> For example, with digital convergence, consumers are now able to buy certain kinds of products (such as digital phones) that package multiple services in a single device. At the same time, however, they lack the type of tools that would make it easy to enjoy the benefits of these new devices, such as a unitary means to securely, easily and permanently archive all of their audio, video, still photo, and document data,. Arguably, consumers need and might want standards that enable ease of use far more than ones intended to enable complex devices, but vendors have simply not (yet) decided that it would be in their best interests to develop and implement such standards.<sup>25</sup> Instead, vendors (such as Apple, with its iTunes music service and iPod series of devices) often continue to promote proprietary formats whenever possible, rather than adopt the type of standardized formats that would make the life of consumers easier, but would also help customers avoid becoming locked into the product line of a single vendor.
- **Features and design:** While competition to provide rich feature sets is in one way positive, this dynamic can go wild where there are no constraining forces and the costs of feature creep are inconsequential. From mobile phones to digital cameras to office productivity software, technology-based products have become ever more complex at the expense of understandability, ease of use and system requirements, commonly arriving with user manuals that can run into the hundreds of pages. Few customers use more than a small fraction of the functionality provided, but many are frustrated and confused by the complexity of operation that including the unwanted functions introduces to the device.
- **Accessibility:** Despite the fact that substantial numbers of consumers have disabilities of various types, vendors have been curiously slow to compete on (or even provide) accessibility features. As a result, while someone in the U.S. who is blind may safely assume that federally compliant buildings will include brail messaging in elevators, they cannot assume that they may purchase increasingly essential IT based products that are suitable to their needs (the same applies to the hard of hearing or those with limited motor control).
- **Health, Safety, Economy:** Many consumers place a high priority on health, safety and "green" product features. Using cars as an example, the average consumer today might well prefer a car that was 20% lighter, if it offered a commensurate savings in fuel economy and reduced carbon dioxide emissions. The automotive industry, however, has consistently lobbied against increasing fleet requirements for fuel economy, even though such requirements would fall upon all vendors (domestic and foreign) alike, placing them at no competitive disadvantage.

**Mode and degree of participation:** Notwithstanding the fact that consumers are by far the largest class of stakeholders, they have traditionally been the least represented constituency in SSOs.

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<sup>24</sup> This lack of alignment exists not only at the level of the specific product and purchaser, but also at the level of society in general. As a result, and for similar reasons, auto manufacturers have traditionally lobbied against, rather than for, advanced safety features, fuel economy and environmental restrictions on their activities, at the expense of the health and welfare of the consumer, as noted in the last bulleted item in the main text.

<sup>25</sup> For a detailed analysis of this topic, see Updegrave, Andrew. *Introducing the Personal Datasphere*, Consortium Standards Bulletin, Vol III, No. 2 (February 2004), at <<http://www.consortiuminfo.org/bulletins/feb04.php#trends>>.

The result is that they are largely dependent on those standards that active participants (and particularly vendors) wish to develop. In general, therefore, the degree to which the world of standards is optimized to the benefit of the consumer is extremely varied, with standards established by government mandate usually representing those most consciously crafted with their welfare in mind.

Traditionally, such standards have been established through direct regulations, but more recently the EU has moved to establish modalities for representing the consumer in standard setting by proxy where consumers themselves are not likely to participate. The most targeted example is the creation of the European Association for the co-ordination of consumer representation in standardization, or ANEC, which was chartered in 1995. Although staffed by volunteers who receive only reimbursement for expenses, ANEC representatives provide a voice for the consumer in scores of European standards committees and other venues.<sup>26</sup>

Consumers are represented in many countries, however, on an indirect basis by other types of organizations, since multiple NGOs (unions, professional organizations, and so on) are eligible to, and do, join some types of SSOs. However, the degree to which this participation is actively and effectively exercised varies widely, with some appointed representatives failing to participate, or participating only passively. Even where such participation is active, the interests of an association (or the management of that association) may not be identical to that of the typical consumer.

As a result, while government regulations protect the interests of the consumer in some essential areas, there are other standards-related consumer interests that are largely neglected.

**Summary:** The voluntary consensus process of standards development offers a good, but not perfect method for serving the needs of all stakeholders. Theoretically, openness to all affected parties should yield balanced results, but that outcome will be favored only if all stakeholders actually participate, and if each is equally motivated to advance its respective cause. Given that this utopian state will virtually never exist in actual practice, it is necessary to add structural and process safeguards in order to achieve a truly balanced result, if that is the goal of a given standards development process.

Currently, the world of accredited standards development has an institutional commitment to achieve balance, but achieves this result with varying success. Consortia, almost without exception, have not included a commitment to this outcome in their charters at all. This leaves the legislative process (itself an imperfect tool) as the only avenue for the protection of the standards-related interests of all stakeholders. However, legislatures are heavily burdened with a multitude of other concerns for which they are the only mechanism available. Not surprisingly, they are therefore typically slow to take on new areas of regulatory responsibility.

As a result, SSOs of all types should be mindful of the fact that government has ceded to them what is in effect a quasi-legislative right to create tools that have profound impacts on society. With this right comes a responsibility to be aware of, and act responsibly towards, the interests of all stakeholders, both non-members as well as members.

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<sup>26</sup> Fabisch, op cit., at 11.

