Standardization and Competing Consortia: the Trade-off between Speed and Compatibility

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Standardization and Competing Consortia: The Trade-Off Between Speed and Compatibility

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ABSTRACT

The consortia movement in the standardization world has led to a fragmentation of standardization processes. This fragmentation is partly of a competitive nature, where rival coalitions support competing technologies. A critique on this movement is that it fragments technologies and multiplies the number of standards. The aim of supporting competing technologies may reflect experimentation with different technological paths. It may also, however, reflect differences in intellectual property rights of firms. From a user's perspective, the competing technologies may represent spurious differences that increase uncertainty, and create transaction costs. The consortia do have a function for end users: Established industry-wide standard development organizations (SDOs) may be slow to act, bureaucratic, and inflexible to changes in users' needs and new opportunities; consortia speed up the process of standardization. This paper argues that consortia do indeed tend to correct these coordination failures of the official SDOs. They do so at a cost, however, and because of this, industry-wide SDOs still have a role to play.

Keywords: DVD Forum; standardization consortia.

INTRODUCTION

The standardization landscape in the information and communication technology (ICT) industries is fragmented in many different standardization bodies, industry consortia, and alliances. Some of these coalitions cooperate with each other, while others compete. The consortia movement is a major cause of competitive fragmentation of standardization. Practitioners and analysts argue with each other about whether this fragmentation leads to coordination failures. The existence of competing standardization coalitions may prevent coordination on a common standard. The argument in this paper is that consortia exist for a reason. A better understanding of why companies have standardization strategies that give rise to fragmentation may show the possible advantages of fragmentation.

An important form of innovation in the ICT industries consists of developing new combinations of components. The ability to connect devices can increase their utility to end-users. An end user can increase the utility of a product by connecting it to complementary products. Hardware and software are examples of this. Connecting different devices may also benefit users by enabling them to communicate with each other by voice or data communication. In both examples, *network externalities* are realized. These are defined as situations where the utility of a product (or a service) to a user increases when more users use the same product or compatible technologies. *Compatibility standards* set specifications for components that make it possible to connect these components to each other. By improving the connectability of products, compatibility standards make it possible to realize network externalities. They create value for the end users or for their suppliers. The standardization process can therefore be an important value-generating process. How this process is organized affects the outcome of the standardization process. Standardization processes are partly organized in coalitions. How many coalitions there are, and how many members each has, is known as the *coalition structure* of the standardization process (Bloch, 1995). An important aspect of the coalition structure is the *level of centralization*, defined here as the extent to which decision making about standards is concentrated in one or more coalitions.

The most centralized coalition structure is the *grand coalition*: a coalition that includes all participants in the standardizing process. In the case of a standard that affects an industry, this will be an industry-wide coalition. It may take the form of an official standards development organization (SDO). A grand coalition has access to the widest number of players and their information. A consensual decision-making process means that specifications are accepted only if no one (or at most a sufficiently small minority) holds out against them. The consensus provides legitimacy to its specifications. Due to its comprehensive membership, information about the new standards is widely available in the field. The comprehensive coordination makes it possible to convene on a single standard. This is an important step towards ensuring that technologies in use are fully compatible, and positive network externalities can be realized.

While there are quite a few grand coalitions, many standardization processes are highly fragmented (Genschel, 1997). A special case of a fragmented process occurs when multiple coalitions compete with each other in a standardization process. If competing coalitions set different, incompatible standards, some network externalities will not be realized. How centralized the emerging coalition structure will be depends on the pros and cons of the various possible coalition structures. The choice of coalition structure faces trade-offs, one of which is between the speed of decision making and the level of compatibility that can be achieved. A grand coalition may be slow to act. It may comprise participants with different backgrounds and antagonistic objectives. Antagonism may lead to intransigent behavior by firms, which slows down decision making the more consensus is valued. If a new standard substitutes for existing technologies, some firms may participate to slow down standardization (Lint & Pennings, 2003).

One way to speed up decision making is for (potential) members to split up to create faster consortia (David & Shurmer, 1996; Warner, 2003). Participants with different or opposite interests may, for instance, be excluded from the coalition. Those who are excluded may go on to form their own committee (Axelrod, Mitchell, Thomas, Bennett, & Bruderer, 1995; Belleflamme, 1998; Bloch, 1995; Economides & Flyer, 1998; Greenlee & Cassiman, 1999). For instance, Bloch (1995) argues that the more intense competition is in the product market, the more firms are tempted to exclude rivals from their coalition. The better substitutes their products are, the less likely that a grand coalition will appear, and the more likely that rivals will establish competing committees. If competing committees are formed, they may accept different, incompatible technologies as a standard.

These arguments suggest that there is a *common view* within the literature on the disadvantages of a grand coalition. This common view implies a circumscribed defense of fragmentation. A grand coalition has a better chance of ensuring compatibility between the technologies used in an industry than competing coalitions. The higher the degree of compatibility between the technologies actually adopted by service providers, the more service providers can realize positive externalities. A grand coalition, however, may also take more time to arrive at a decision than competing coalitions. It has more opposite interests to accommodate. This delay represents an intra-coalition coordination failure. The smaller size of competing coalitions, and the competition between them, tend to speed up their decision making. This greater speed does come at the possible risk of selecting incompatible technologies, which generates an inter-coalition coordination failure (see Figure 1).

Figure 1: Common View on Coalition Structure

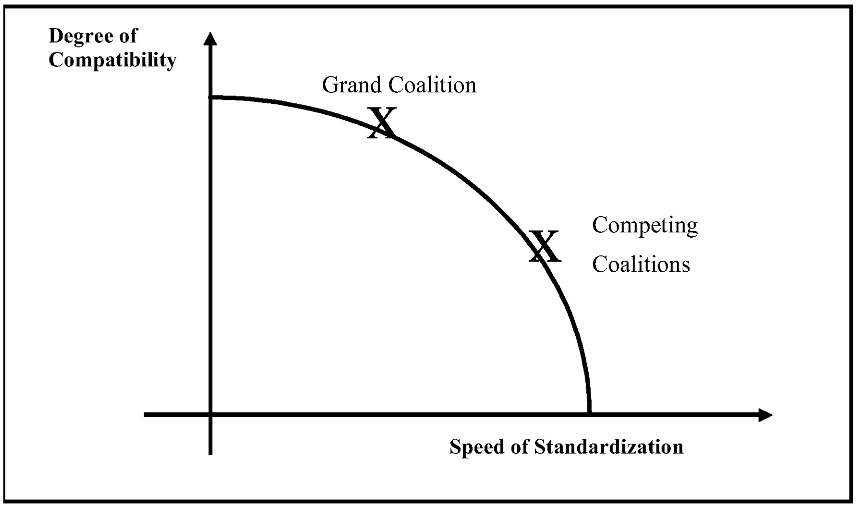


Figure 1 shows the two propositions inherent in the common view. Firstly, speeding up decision making about standard setting tends to reduce the compatibility between the technologies that end users will adopt. Secondly, while a grand coalition is better at achieving conditions of compatibility, competing coalitions are better suited to select standards quickly.

This paper subjects the common view to a critical and theoretical analysis. The next section presents some examples of grand coalitions and competing coalitions. It illustrates that standard setting is a conflicted, political process. Because of this, standard setting tends to occur in coalitions. Exposed to conflicting political pressures, coalitions can both experience consolidation as well as fragmentation. The subsequent section of this paper asks: Is there support from the literature that grand coalitions are reduced in their speed of decision making by internal antagonism? And do competing coalitions arrive at standards quicker than a grand coalition would, at a cost of less compatibility? The focus in the review is on insights about the decision-making and interaction process in standardization. It argues that there are sound, basic theoretic reasons to believe that a trade-off between speed and compatibility exists. It does suggest, however, that cases exist where a grand coalition can decide more quickly about a standard than competing coalitions. While a fragmented standardization landscape may have its benefits, a balanced view should acknowledge that there are cases where a grand coalition is quick to overcome competing interests.

Examples of Grand Coalitions & Competing Coalitions

Two examples illustrate the push and pull between a grand coalition and competing coalitions. The following quote from the IT website *The Register* on the Open Mobile Alliance (OMA) may illustrate the common view:

"The OMA is intended to harmonize a barrage of mobile industry standards for 3G, hitherto a barrier to creating a seamless mobile Internet...But wide participation will slow OMA and put global standards out of reach. Let's face it: The more players that get involved, the more time it will take for them to agree on anything at all—and many will participate only to slow down development and control the market." (Forrester, in *The Register*, 13 June 2002)

The OMA (http://www.openmobilealliance.org/) develops and supports standards for mobile telecommunication and data communication services. It resulted from a merger between different industry consortia, including the Open Mobile Architecture, the WAP Forum, the Location Interoperability Forum, and the MMS Interoperability (MMS-IOP) Group. Fragmentation may apparently go too far, in which case consolidation occurs. With more then 200 members, the OMA is however very large. Within the fragmented standardization context, the OMA intends to play a central role: "The Open Mobile Alliance is designed to be the center of all mobile application standardization work" (OMA, 28 October 2003, http://www.openmobilealliance.org/faq.html).

The DVD Forum (http://www.dvdforum.org) is another example of a grand coalition. It is an industry-wide consortium that develops and promotes the DVD format as a standard. As of October 2003, it had 212 members. According to the association, "The geographic distribution of our members, as of March 2003, was as follows: 38% Japanese, 29% Asian, 20% American, and 13% European." Characteristic of the politically charged standardization process of DVD and derivative standards, the DVD Forum notes: "Forum Members are not required to support the DVD Format to the exclusion of other formats" (DVD Forum, http://www.dvdforum.org/about-mission.htm, 27 October, 2003). The website of the forum publishes antitrust guidelines to ensure that its activities do not develop into a cartel. Discussions in the DVD Forum may not refer to prices or to costs. These antitrust requirements help to create a non-commercial, technical atmosphere that may reduce the level of conflicts between the representatives of the companies within the Forum. Conflicts between the DVD Forum members may exist. That they do exist is apparent from the competing technologies for DVD-rewritable.

There are currently three technologies for DVD-rewritable: DVD-RAM, DVD+RW, and DVD-RW. Each of these has a coalition of supporters. For example, Sony, Ricoh, Hewlett-Packard, Philips, Mitsubishi, and Yamaha support DVD+RW. This coalition is called the DVD+RW Alliance (http://www.dvdrw.com/). The DVD-RAM Promotion Group members are Hitachi, Hitachi-LG Data Storage, Hitachi Maxell, LG Electronics, Matsushita Electric Industrial, Samsung Electronics, TEAC, Toshiba, and JVC (CNET, 21 August 2003, http://news.com.com/2110-1041-5066673.html). Apart from that, there is also the DVD-R recordable technology. It is supported by the recordable DVD Council (http://www.rdvdc.org/english/index.html).

The DVD Forum did not select a priory a standard for DVD-rewritable. It does note on its homepage: "Please note that the '+RW' format, also known as DVD+RW' was neither developed nor approved by the DVD Forum. The approved recordable formats are DVD-R, DVD-RW, and DVD-RAM" (DVD Forum, 28 October 2003, http://www.dvdforum.org/forum.shtml). The developers of the DVD+RW format chose to keep their work outside of the DVD Forum. The other coalitions liaise with the DVD Forum by means of the Forum's working groups. There is one working group for DVD-RAM, and one for both DVD-R and DVD-RW.

The DVD example shows that a grand coalition can exist that endorses a unified standard, notably the DVD standard. It also shows cases with competing coalitions. The grand coalition is, with more than 200 members, very large indeed. The political nature of their cooperation can hamper the activities of the Forum. Having competing coalitions, however, leads to incompatibility, which may harm end users and slow down their adoption of the new formats. The OMA reacted to the fragmentation of mobile standard setting by consolidating various initiatives and coalitions. The next section explores a trade-off that may explain the push and pull between, on the one hand, consolidation into a grand coalition and, on the other hand, fragmentation into competing coalitions.

Trade-Off Between Timing & Compatibility

This part of the review asks if a trade-off exists between timing and compatibility. Is a coalition structure that is geared to achieving compatibility ill-suited to select a standard quickly? The proposition we wish to explore is that the higher the level of centralization of a coalition structure, the higher the chance that it generates compatibility at the industry level and the longer standardization tends to take. The more inclusive an individual coalition is, the longer it takes to agree on a standard. By implication, the larger a coalition is, the slower its decision making tends to be. In a setting with a given set of firms, this implies that a grand coalition will decide slower than competing coalitions would. We discuss various arguments that support this idea. Both the process of forming a coalition and the decision-making process within a coalition take time.

Forming a coalition is a time-consuming process. There is an initialization phase to a partnership (Zajac & Olsen, 1993). In this initialization phase, firms communicate, negotiate, analyze feasibility studies, and forge relational exchange norms. Which factors can facilitate this process? One factor will be the size of the coalition. The more members in a committee, the more alternative technologies there may be to choose between. Communication takes time. The more people are involved, the more time it takes to communicate with them. If participants have different backgrounds, it can take time to translate concepts between them. They will need to develop a common vocabulary. In the Internet tradition, for example, participants in a standardization process will often need to define concepts first, using a document type called a Request for Comments, RFC. An example is RFC 2119 of the Internet Engineering Task Force (IETF), which defines among other things the meaning of concepts such as must, must not, shall, etc., when used in standards.[1]

There are factors that may shorten the initialization phase. Prior contacts between the partners can facilitate the set-up of a partnership. This may explain an insight about partner choice in strategic alliances: firms with prior contacts are more likely to become partners in an alliance (Gulati, 1995). Firms may form a private consortium in order to work with long-time allies, while excluding potential rivals and outsiders. A consortium consisting of insiders may be formed quickly, which underlies the speed of decision making by small competing coalitions. A permanent SDO can shorten the initialization phase by adopting standard procedures and routines for new workgroups. This offers some compensating speed advantage to SDOs that act as a grand coalition.

Decision making in a coalition is a political process. Time is both a consequence of the process and an instrument in it. Important players in the process are the sponsors. A *sponsor* is a firm that actively supports a particular specification for a standard through a standardization process. It is likely to be a firm that expects that this specification will bring it more revenues than any other. It is, for example, the innovator who developed the technology that can be standardized. A sponsor may insist on the coalition standardizing on its preferred specification. If other organizations are equally intransigent, the combination of their efforts slows down the process of creating consensus and selecting a standard.

A technology sponsor may try to win over the grand coalition by actively participating in its activities. Organizations may invest in influencing activities to influence the coalition's decision making (Besen & Farrell, 1994). In the ICT industries, for instance, sponsors influence official standardization bodies by means of the contributions they make to the work of these bodies. An interesting paper observes that large companies increased the number of staff they dispatch to meetings of official organizations, such as the IETF and the IEEE (the Institute of Electrical and Electronics Engineers) (Heywood, Jander, Roberts, & Saunders, 1997). They hire people who have gained influence and reputations in official standard-setting organizations. They also try to influence who will chair workgroups of standardization organizations. As Heywood et al. (1997) show, standardization organizations are aware of these possibilities, and try to design rules to suppress them.

Rules and procedures in standardization coalitions may suppress politicking behavior of individual participants. They may also diminish the influence of these participants. As a result, these firms may abandon the coalition and set up competing coalitions. In a decentralized coalition structure with multiple competing coalitions, an individual firm has a larger chance of influencing its particular coalition. A grand coalition may want to prevent defection by being very responsive to the interests of its members. Too much responsiveness may bog down the standardization process (Sherif, 2003b). The more contingencies a specification needs to be tailored to, the more complicated the specification will be. Hence, a grand coalition faces some tension between speeding up decision making and ensuring compatibility of new technologies.

In terms of the speed of decision making, competing coalitions have several advantages over a grand coalition. The competition may provide incentives to speed up. If one coalition sets a standard before another one, the latter may be too late to get its standard adopted in the market. Each coalition tends to select its members carefully. It can exclude members, unlike the grand coalition, which needs to open up to all potential members. The ability to exclude potentially obstructive or intransigent members reduces the tensions within a coalition. Competing coalitions can thus be less inflicted by tensions than a grand coalition. With lower levels of politicking, they can act faster. The sheer size of the coalition may also help: a smaller coalition can act quicker than a larger one. Fewer participants need to participate in decision making. A smaller and more focused group may have a shorter initialization stage than a grand coalition. The participants may already be familiar with each other, which reduces the effort needed for initialization. These are compelling arguments to suggest that a grand coalition tends to take more time to select a standard than competing coalitions.

A second impact of coalition structure is that the more centralized it is, the more likely that the market will adopt compatible technologies. In particular, a grand coalition is more likely to adopt a single standard than competing coalitions. A grand coalition can select a standard from among competing technologies. It may also try to combine different technologies into a compromise standard. The DVD standard is the result of such a compromise.[2] The DVD consortium (the precursor of the DVD Forum) combined the multimedia CD coalition of Philips, Sony, and 3M with the super-density CD of Toshiba and Time Warner. The combination gave rise to the DVD specification, albeit after disagreements in the DVD Forum about the specifications and licensing schemes delayed the introduction of DVD products (van Wegberg, 2003). A grand coalition or industry-wide standard development organization can also design specifications to reduce incompatibility. For example, the IEEE has developed several standards for wireless data communication. Some of these technologies use the same unlicensed frequency band. As a consequence, wireless systems can interfere. Interference can diminish the quality of the signal. The IEEE developed standards for Wireless Local Area Networks and Wireless Personal Area Networks that reduce the disadvantages of interference.[3]

The effort in a grand coalition to create compatibility is another reason why the process may take more time than competing coalitions. The more different parties are taken on board in a standardization coalition, the more complicated it is to develop specifications for a standard that all can accept and can be compatible with. One of the solutions for this problem is to develop standards with options (Egyedi & Dahanayake, 2003). The different options reflect different interests and views of the parties combined in the SDO or coalition. This allows technology providers and adopters to switch these options on or off, depending on which interests, views, and preferences they have. The advantage of including options in the standard is that it enables the SDO to forge a compromise that is acceptable to its members. A disadvantage is that in the implementation phase, differences come to light in the technologies used by the standard's adopters, due to their different choices of which options to (de)activate. The need to compromise between its many members may thus reduce the ability of a grand coalition to create de facto interoperability (compatibility) in the implementation of the standard.

Grand coalitions such as formal standard-setting bodies know they need to speed up decision making (David & Shurmer, 1996). One of the solutions is to produce incomplete standardization by means of meta-standards. A *meta-standard* establishes some conditions and aspects of a standard, without specifying the standard itself in full detail. Settling details of a standard can take a lot of time. Setting a meta-standard avoids the need to fine-tune the standard, and thus speeds up decision making. The advantage of having a meta-standard in an early stage is that it preempts companies that might otherwise commit to incompatible technologies. A disadvantage of setting a meta-standard is that private companies adopt technologies that are only partially standardized. They may, inadvertently or otherwise, implement technologies that are partially incompatible. This solution therefore gives up some compatibility in order to speed up decision making in a grand coalition.

A grand coalition will not always be able to ensure compatibility when its members simultaneously play a game of *de facto* standardization. A participant in the grand coalition may try to create a fait-a-compli to force the coalition to bend to its wishes. It may start an installed base with its technology in an attempt to strengthen its bargaining power in the coalition. This leads to *hybrid standardization*: a standardization process where firms pursue standardization by two simultaneous paths, using both the market mechanism and negation in a coalition (Axelrod et al., 1995; Farrell & Saloner, 1988; Funk & Methe, 2001). In a hybrid standardization process, a grand coalition cannot guarantee compatibility. The best way to prevent incompatibility in this case is for the grand coalition to agree on a standard fast, before some of its members have committed themselves to a de facto standard. A hybrid standardization process may thus speed up standardization, but at a cost (Farrell & Saloner, 1988). The cost may be that companies adopt incompatible technologies.

There are thus various reasons why a grand coalition may not be able to guarantee compatibility. Political compromises lead to ambiguous standards, with options that can be activated or deactivated at will, thus creating compatibility. A meta-standard can speed up standardization, at a cost of leading to incompatible technologies in use. Hybrid standardization increases the bargaining power of coalition members that have a strong position in their product markets. Their early preemptive moves in the product market build up an installed base for a technology that the coalition may be hard-pressed to ignore. The presence of competing specifications in technologies reduces the level of compatibility, however.

While the grand coalition may not guarantee compatibility, the presence of competing coalitions need not per se lead to incompatibility. If one committee adopts a standard quickly, the members of a competing coalition may adopt that standard (Genschel, 1997). In this case firms abandon the slowest committee. Furthermore, competing committees make choices that do not have to be entirely incompatible. They may adopt partially overlapping technologies, leading to partial compatibility. In his book about Bill Gates, Wallace (1997) gives a more controversial example, when he attributes to Microsoft the strategy of *embrace and extend*. This strategy confronts a successful technology of a rival, but not by developing an incompatible alternative. Instead, the embrace and extend strategy is to adopt the technology, and then to extend it with proprietary extensions.[4] Once users adopt these extensions, control over the technology shifts to Microsoft. Competing coalitions may have the same motive to adopt partially or wholly a rival committee's technology. As a result, in a setting of competing coalitions, committee standards can be hybrids that combine elements from competing technologies (for an example, see Mangematin & Callon, 1995).

If standardization coalitions or organizations cannot avoid incompatible technologies, they can design standards such as to make it possible to have gateways between incompatible technologies. For example, the IETF and the ITU (the International Telecommunications Union) cooperated to develop the Megaco/H.248 gateway protocol to act as a gateway between dissimilar networks.[5]

To conclude the discussion: it is likely, but by no means certain, that a grand coalition takes more time to conclude a standard than smaller competing coalitions would. It is, moreover, not self-evident that a grand coalition ensures a higher degree of compatibility than competing coalitions would. Only when a grand coalition compensates for a longer duration of decision making, by increasing the expected degree of compatibility, do firms face the trade-off between speed of decision making and compatibility. The literature review thus suggests caution with respect to the view that there is a trade-off between compatibility and speed of decision making.

Reasons for the Consortia Movement

The consortia movement has led to fragmentation of standardization. It has compromised the ability of SDOs to act as a grand coalition. There may be many reasons for this process (see, e.g., Shapiro & Varian, 1999). Figure 1 offers a good framework to understand one set of reasons. Figure 1 suggests that if the preference that firms have for a high level of compatibility would decrease, and their preference for speedy standardization would increase, they would want to switch from a grand coalition to competing coalitions. A shift in preferences from compatibility to time-to-market will explain fragmentation.

An important step in exploring firms' preferences for coalition structures is the value they attach to compatibility. An open industry-wide standard can be a platform for new services. This applies to *anticipatory standards*, which are standards for new technologies that will develop new services and associate markets (Sherif, 2003b). There are direct network externalities if new services enable users to communicate with each other. The more users can communicate with each other, using standards-compliant equipment, the more benefits they derive from participating in the new service. This is how a standard can create value. The higher the degree of compatibility between the technologies used by vendors, the greater the value created in the product market (Katz & Shapiro, 1985).

On the demand side of the market, compatibility may not be very important.

If users tend to communicate in small communities, the sheer size of the network of users may not increase their benefit. As long as a standard dominates within their particular community, they may not care about standards used by other communities. A study by Cowan and Miller (1998) offers support for this intuition. It studies a case with local externalities, where neighbors are potential adopters of a standard to communicate or cooperate with each other. It finds that users may adopt incompatible technologies. Since they communicate locally, they are not aware (and do not care) of far-away users adopting a different technology.

Even if there is no standard, service providers may realize network externalities for their end users. They can start gateway services that connect users of incompatible technologies. Converters link the users of otherwise incompatible technologies. They help these users to achieve positive externalities (Choi, 1996).

On the supply side of the market too, there may be insufficient preferences for compatibility. Innovators may benefit if their innovation is accepted as a standard. They want to earn revenues from their intellectual property rights on the innovation. They are concerned about the *appropriability* of revenue streams. They may care more about their share of the revenue stream from a standard than about the absolute size of revenues created by the standard. Patents are a case in point; they give the innovator some control over revenue flows generated by the innovation. If a standard increases the value of the intellectual property right on a technology, the firm may be more interested in supporting one particular technology than in having an industry-wide standard per se. A concern with intellectual property rights on technologies may lead to fragmentation of the standardization process. Blind (2001) finds empirical support for the argument that patent protection may make companies reluctant to set standards via national or international standard-setting organizations (SDOs).

The value of compatibility may thus be limited. The importance of time-to-market, on the other hand, is increasingly emphasized. If there are first-move advantages in competition, firms are likely to disagree with a time-consuming decision process in a committee. If, however, there are second-move advantages, there is a benefit to waiting, and speeding up standardization may not be a priority at all. If technology improves continually, for example, users may switch to an incompatible technology if its quality is sufficiently higher than the established technology (Katz & Shapiro, 1992; Shy, 1996). Shy (1996) shows among others that if new technology is backward-compatible with the old technology, users are more likely to switch to the new technology. This reduces the lifetime of the older technology. The lifetime of a standard thus depends on the willingness of users to wait for better technology to appear.

Speeding up standardization will be valuable if the benefits from the standard are time-dependent. The standard is a specification for a technology. There are expectations about when the technology will be superseded by a superior technology. Technologies have a lifecycle; the more time in this cycle absorbed in the standardization process, the less time remains for using it in marketable products. A standard may be a platform for new or improved services. These services themselves have a product lifecycle (Sherif, 2003a). Delaying the product introduction delays the start of revenues. Due to the time preference of the potential vendors, they are likely to want to speed up market introduction.

Figure 2 summarizes the relationships discussed so far.

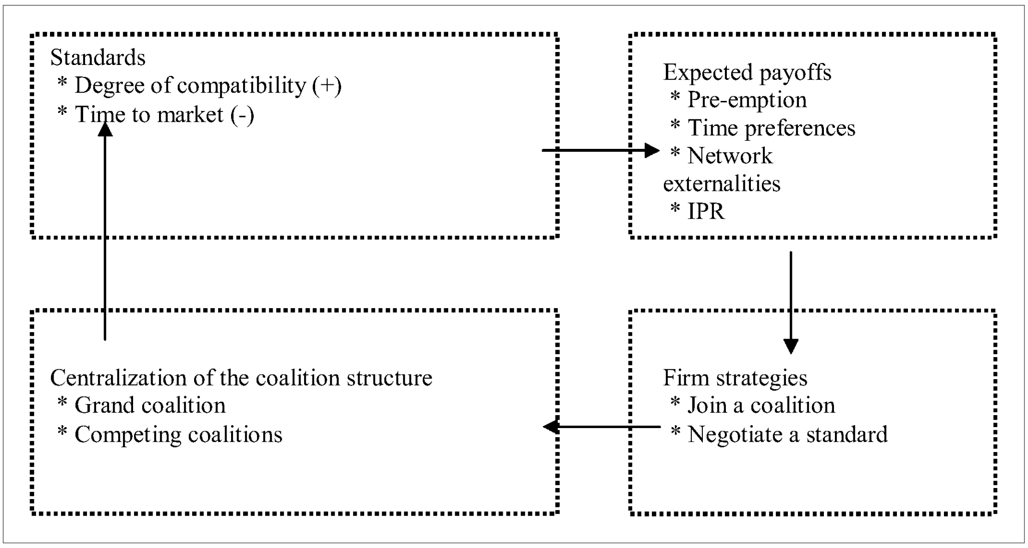
A shift in the objectives of firms may have occurred, away from stressing network externalities, and toward greater emphasis on pre-emptive moves, first-move advantages, and intellectual property rights. This shift itself would explain the fragmentation created by the consortia movement (see Figures 1 and 2).

Solutions & New Roads

The situation in Figure 1 illustrates the quandary that both grand coalitions and sets of competing coalitions find themselves in. The problem for a grand coalition is that its main value added is to enhance compatibility between the technologies that adopters will be using. The more it works toward achieving this goal, the more it will be perceived as a slow mover. We discussed some moves to speed up decision making of a grand coalition. It may establish options in a standard or generate a meta-standard. These may increase the speed of decision making, but they do jeopardize the compatibility and interoperability of technologies used. A grand coalition that does not give in to pressures to move faster may see its members defect to private consortia. Many grand coalitions, and notably official SDOs, try to break the trade-off by learning from the consortia movement (Krechmer, 2003).

Faced with the trade-off between speed of decision making and compatibility, a grand coalition may try to have its cake and eat it too. Some official SDOs

Figure 2: Choice of Coalition Structure in the Trade-Off Between Speed and Compatibility



have established workshops for different standards. The European SDO CEN/ISSS uses workshops to attract new members and develop consensus quickly.[6] CEN/ISSS encourages private companies to participate in these workshops. Another way to involve private companies is by creating workgroups and giving these a fast-track access to standards approval. These workgroups may become substitutes for private consortia. There may be some fragmentation left, but this will take the form of multiple workgroups or workshops within the common framework of an SDO or grand coalition.

For competing coalitions, Figure 1 illustrates that their problems lie in a different field. Their main added value is timely standardization within a focused group of companies. The problem they run into is fragmentation, and an associated loss of coordination at the level of the industry. They may overcome this problem by consolidation. The DVD example showed how two competing coalitions merged into the DVD Consortium. The resulting coordination may fall short of creating compatibility. The DVD Forum, for instance, hosts two workgroups that work on incompatible specifications for DVD-rewritable: the DVD-RAM and DVD-RW specifications.

These solutions suggest that some convergence occurs between SDOs and consortia. Some consortia, like the DVD Forum and the OMA, acquire SDO-like characteristics. They are large, inclusive, industry wide, and open to new members. Some SDOs become more consortium-like, by providing fast-track approval procedures, and opening workgroups or workshops to private companies. However, differences in priorities and objectives are likely to persist between private consortia and official SDOs (Krechmer, 2003).

Where fragmentation is unavoidable, coordination can be improved by creating liaisons between SDOs and consortia. Several SDOs have established MoUs (Memorandums of Understanding) about their relationships with one another and with private consortia. While these new forms of coordination may reduce the unintentional levels of incompatibility that may result from fragmentation, they may also increase the time and effort needed to develop new standards. They therefore represent new, intermediate forms of coalitional standardization processes.

CONCLUSIONS

This paper argues that having an industry-wide standardization coalition may slow down standardization, compared to cases where smaller coalitions of firms compete with each other. The conflicts of interest between the participants in the grand coalition lead to politicking, which in turn can stall decision making. Competing technology sponsors hold the grand coalition to ransom, in order to get their preferred technologies selected as standard. Competing coalitions have a greater incentive to speed up their decision making. The presence of competing coalitions may, however, lead to incompatible technologies being adopted in the marketplace. This may exacerbate a conflict of interest between technology sponsors, on the one hand, and technology adopters on the other hand. Technology adopters may have a greater preference for compatibility and interoperability. Their fear for incompatibility may hold back standardization in competing committees. Technology adopters give in to politicking themselves, in order to avoid an unwanted level of incompatibility. As a result, in certain situations a grand coalition can decide quicker than competing committees. It satisfies the greater preference that technology adopters tend to have for compatibility. This result sheds doubt on the common view that industry-wide standardization coalitions are slow.

In choosing a coalition structure, firms balance two types of coordination failure: the failure to select an industry-wide standard (when competing committees support competing technologies) and the failure to decide in a timely manner (when negotiations in a grand coalition lead to stalemate or when competing committees hold back, fearing incompatibility). According to the common view, the need to reach an agreement between competitors within a grand coalition leads to lengthy negotiations. If sponsors of rival technologies set up their own coalitions, this can speed up standardization. Competition between standardization coalitions does, however, squander some benefits of having a standard (the so-called network externalities). The new insight of this paper is that a fear for resulting incompatibility affects the timing of decision making in a negative way. Technology adopters may slow down the coalition they participate in, in order to keep track of what a rival coalition is up to. This does slow down the standardization process with competing coalitions. When that happens, a grand coalition can select a standard faster than competing coalitions can.

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ENDNOTES

[1] See http://www.ietf.org/rfc/rfc2119.txt for this RFC (Nov. 2002). Note that an RFC is a standard, in the language of the IETF.

[2] Aguilar, R. (1996). Philips, Sony team to hurry up DVD, CNET, http://news.com.com/2102-1023-219879.html, August 2, 1996.

[3] IEEE — http://www.ieee.org. Shellhammer, S. (2001). IEEE 802.15.2 Clause 5.1 Description of the Interference Problem, July 2, 2001.

[4] There is debate about whether this strategy is legal. Judge Motz of the U.S. district court in Baltimore ordered Microsoft to include Sun Microsystems' version of Java with the Windows operating system (CNET, http://news.com. com/2102-1001-978786.html, December 23, 2002). The verdict is a response to Sun's suing Microsoft "for allegedly violating antitrust law in dropping Sun's version of Java and including its own version, which Sun alleges to be incompatible with its technology."

[5] IETF, 18-2-2002, http://www.ietf.org/html.charters/megaco-charter.html, and IETF, Request for Comments: 2805, April 2000, http://www.ietf.org/rfc/rfc2805.txt.

[6] Lecture by John Ketchell, Director of CEN/ISSS, SIIT 2003 Conference, Delft.

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