

## Promoting Legitimacy in Technical Standardization<sup>1</sup>

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received 14 November 2005, received in revised form 14 February 2006, accepted 21 February 2006

### Abstract

In this article we examine the legitimacy of committee standardization as an alternative to pure market processes of technical standardization of information and communication technology (ICT). We argue that not only mandatory (regulative) but also voluntary (coordinative) standards require some kind of democratic legitimacy. While the question of how to achieve this legitimacy has become central to today's changing world of standards, this situation is not adequately reflected in how the mounting legitimacy-deficit is treated. We note here that there remains a tendency to think of the legitimacy-deficit primarily in terms of "input legitimacy" criteria. At the same time we observe a tendency for standardization organizations (SDO) to orient efforts towards achieving "output legitimacy" by developing standards that are regarded by diverse groups of (legitimizing) stakeholders as constituting "good standards". This article therefore applies the distinction between input and output legitimacy to the rapidly evolving standardization landscape, arguing that it is necessary to expand the analysis of the legitimacy-deficit in the formal bodies responsible for ICT standards. We address what democratic legitimacy means in terms of standards and standardization, discuss why it is particularly important here, and explore how it has been addressed. Current examples indicate that in order to arrive at "good" standards SDO extend and redefine the cognitive and normative frame of standardization. This frame change helps to include non-technical and non-commercial interests and values without directly involving the growing variety of stakeholders and civil society advocates in the process.

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<sup>1</sup> Earlier versions of this paper were presented at the 7th Conference of the European Sociological Association (Torun, Poland, Sept. 9-12, 2005) in the session "Science, Technology and the Public" of the Research Network Sociology of Science and Technology (SSTNET) and at the Stockholm Centre for Organizational Research (SCORE) Conference "Organizing the World" (Stockholm, Sweden, Oct. 13-15, 2005). We would like to thank two anonymous reviewers for their helpful comments.

## 1 Introduction

Legitimacy of standards and the standardization process has become absolutely central to today's changing world of standards. Yet there remains a tendency to think of the legitimacy-deficit in standards primarily in terms of "input legitimacy" criteria, especially in terms of representation of different stakeholders during the standardization process. This focus on input legitimacy alone however inevitably falls short of the expectations of the theory of democratic representation which it attempts to live up to. Legitimacy based on this form of representation is extremely difficult if not impossible to accomplish in standardization. This has increasingly been recognized by the standardization organizations (SDO) which have started to work around the limitations of the engrained focus on input legitimacy alone.

A starting point for the article is thus the observable trend for SDO to re-orient their quest for increased legitimacy around efforts to achieve "output legitimacy" by developing standards that are regarded by diverse groups of (legitimizing) stakeholders as constituting "good standards". Here we observe that SDO increasingly attempt to provide for the consideration of interests and values of groups such as environmentalists, consumers or employees. Recently civil society groups have tried to establish more general public policy interests as the basis for deliberation in some SDO. This reinforces efforts of the SDO to avoid overloaded processes that attempt to directly involve too many stakeholders and advocates but to draw attention to their interests and values through modifying the cognitive and normative frame in which standard setting takes place.

In this light the article applies the distinction between input and output legitimacy to the evolving standardization landscape on the premise that

effectively addressing the legitimacy-deficit requires coordinating both input and output based legitimacy approaches that are appropriate to different standards settings. We particularly address the area of voluntary ICT standards because these directly affect core aspects of the network society. We discuss whether different types of standards involve different legitimacy requirements, distinguish between input and output legitimacy, and look at the cognitive and normative frame of the committee deliberations in order to more precisely analyze the strategies of the standardization organizations to meet the legitimacy requirements. Some illustrations of more recent output-oriented measures are also presented.

## 2 Standards and legitimacy

### 2.1 Focus on ICT standards

Standards are acknowledged to be building-blocks for the information society. What these blocks are, how and why they come about, and what they achieve are matters the literature has, somewhat curiously, found difficult to provide uniform answers. The heterogeneity of concepts and definitions of standards and standardization testifies to the heterogeneity of the phenomenon. But it also reflects the fact that standards and the standardization landscape in which they are set continue to undergo profound change as a function of the brisk dynamics of the industry and changing power relations.

To a large extent the dynamics of the ICT industry are responsible for this change in institutional, organizational and process aspects of standardization. These are reflected in:

- The formal setting in which the process takes place (on markets, among firms, by committees).
- the rationale that initiated the process (e.g. to establish technical compatibility, to promote competi-

tive advantage, to minimize negative externalities),

- the mechanisms employed to involve the relevant stakeholders and allow them to help shape the standard (membership conditions, intellectual property rights, regulatory requirements, etc.),
- as well as characteristics of the outcome (public-good, private good content) and the forces that shape the expectancy to adopt or otherwise comply with the output.

How a standard comes into being and according to which mode it diffuses are crucial dimensions which affect the democratic legitimacy of the standard. This applies to all kinds of standards – product and process standards, measurement standards but also newer types of management standards. They all carry a cognitive or normative expectation to comply. Despite many commonalities there are also crucial differences between standards groups.

The argument here focuses on the legitimacy of committee standardization as an alternative to pure market standards processes. Our attention is concentrated on standards in ICT since this technological area brings together a pronounced reliance on standards on the one hand, with a central societal importance as the core of the network society on the other. Information and communication technology accelerates the diffusion of inter-organisational networks and intensifies communication and collaboration between organizations and individuals (Castells 2001). ICT facilitates e-business and e-government if standards are available and complied with. They ensure the compatibility of components and the accuracy of technical operations and they guide the use of the systems. The standards impinge on the benefit and risk which the utilization of technology entails for users and third parties as well. It has been argued that standards might even have an effect on the "democratic quality" of ICT (cf. Iversen et al. 2004).

## 2.2 Important distinctions in the world of standards

Concerning the legitimacy of standards it is important to distinguish between standards set on markets and those that involve formal standardization procedures. In the first case, individual commercial interests can manage to promulgate ICT solutions on the market where they become de-facto standards. The market is the ultimate selection environment for technologies and this is the default situation for the diffusion of standards incorporated in the technology. The diffusion of de-facto standards is based on market leadership or on bandwagon and imitation processes, in which the number of actors attracted by a standard increases with the number of those who have already adopted the standard.

Other standards are developed and agreed on in committees. Such committees, generally called standards developing organizations (SDO), are dedicated to the joint elaboration of standards. The SDO differ with respect to their degree of explicit institutionalization – some have a more official others a more informal character – but they share many procedural elements and rules of collaborative committee standardization. We will focus on these in section 3.

The distinction between market standards and committee standards arises from the circumstances of their emergence. Equally important from the perspective of the legitimacy of standards is the degree to which their compliance takes on an obligatory nature. Standards differ in this respect. Some are regulative others coordinative (Diagram 1).<sup>2</sup> Regulative standards – often in the form of maximum or minimum requirements and limits – aim at preventing negative external-

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<sup>2</sup> This distinction serves an analytical purpose. Many standards blend coordinative and regulative elements.

ities through internalization, i.e. imposing the externalities on those who have induced them. These standards depend on governments or other political authorities to become effective within their area of jurisdiction. Thus, regulative standards for, say, environmental protection, have the

Regulation, on the other hand, shows features of a "prisoners' dilemma" where incentives to cooperate are so weak that, as a rule, no common socially beneficial solution is achieved voluntarily (Snidal 1985). The latter problem can only be overcome in a "collaborative regime" which is based

**Diagram 1: Two types of standards: An analytical distinction**

	<b>Coordinative</b>	<b>Regulative</b>
<b>Aim</b>	Interoperability, compatibility	Prevention of negative externalities of technology
<b>Mode of generation</b>	Negotiation of agreements among "interested" actors, emergence in markets	Hierarchical political governance
<b>Normative character</b>	Convention, voluntary	Legal rule, mandatory
<b>Area of validity</b>	Industries, markets (techno-economic units)	States (political units)
<b>Economic effects</b>	Reduction of transaction costs, positive externalities	Internalization of negative externalities

(Source: Werle 2002: 246)

normative character of a legal rule or an ordinance mandated by hierarchical political governance.

Coordinative standards, such as protocol and interface specifications, on the other hand, frequently aim at promoting interoperability and compatibility of technology in order to reduce transaction costs and to generate positive externalities. These standards cover economic sectors (industries) or markets for the respective technology, and they ignore political frontiers. Coordinative standards, say, a specific modulation procedure, emerge in markets or result from voluntary agreements. They are similar to conventions and tend to be self-enforcing, i.e. they enjoy a considerable likelihood of compliance (Schmidt/Werle 1998: 119, 120).

Put in game-theoretic terms, coordination is often akin to the "battle of the sexes". Here actors strive for a common solution but initially disagree as to which particular solution to choose.

on enforceable agreements secured by hierarchical political governance. Coordination in contrast can be achieved on a voluntary basis. In this case a "coordinative regime" facilitates institutionalized self-coordination by providing opportunities to communicate and to negotiate a common solution (Stein 1990).<sup>3</sup>

The two types of standards require different levels of democratic legitimacy. It is clear that standards that are imposed and that thus become mandatory need strong democratic backing.

<sup>3</sup> This distinction of coordination and regulation looks at costs and benefits from a rational perspective focusing on interest and utility. But regulation, often taking the form of legal rules or law, also engages normative considerations and touches upon social values which are symbolized and reinforced by these rules. "Content" regulation – for instance, focusing on what is communicated or broadcasted via the channels of a telecommunications network – is usually based on normative as well as economic or commercial criteria.

Actors who benefit from the provision and use of a product or service will not be inclined to bear costs or other burdens which, as a side effect of their activities, are incurred by third parties. These actors, who may not even be aware of the negative externalities, are compelled by regulative standards to internalize the externalities. Thus, at first glance, these standards appear to be extremely precarious from the perspective of legitimacy. But if they are included in legal regulations, they derive their legitimacy from the national governments or the intergovernmental regimes which promulgate the standards. Accordingly, legitimacy is not so much contingent on how and by whom a regulative standard has been developed (e.g. by a bureaucracy or by an expert committee) but rather on the authority of the government or intergovernmental organization which adopts the standard.

The situation is different if political authorities have de-facto delegated regulatory power to an SDO. The "New Approach to Technical Harmonization" directive of the EU provides a case in point. According to this directive, European harmonized standards which include regulatory elements ("essential requirements") are developed by European SDO and de-facto binding without further endorsement by the political authorities. Similar patterns have evolved in national standardization. But as European and national SDO do not have the legal status of independent regulatory agencies (Thatcher 2002) political authorities must be concerned about the legitimacy of the standardization process: its openness, transparency, and democratic pluralism (Daelemans 1997; Egan 1998; Tamm Hallström 2004: 11-15).

Voluntary (coordinative) standards – no matter whether they were developed by an SDO or emerged in a market – seem to be less problematic than technical regulations as regards the requirement of democratic legiti-

macy. Formally nobody can be compelled to comply with a coordinative standard. But this view would be too narrow. Some standards may be indirectly promulgated by governments or courts referencing them in legal regulations or judicial decisions. Equally important is that particularly in network industries such as telecommunications and information technology coordinative standards can attain a quasi-mandatory status as a consequence of network effects (Shapiro/Varian 1999). If a standard becomes prevalent in such an industry, it may eventually lock in (Hawkins 1999). That means that producers and users of a specific product or service may be compelled to conform to the prevailing standard even if they have implemented a different one and face high switching costs. In this way, a coordinative standard developed by an SDO may require legitimacy comparable to a regulation despite being imposed through a market process.<sup>4</sup>

### 3 Deliberation in standardization organizations

Technical standards are never purely technical but can obscure commercial interests, political preferences, moral evaluations etc. at the same time that these underlying interests and choices are brought to bear. This ambiguity is again why the democratic legitimacy of all standards is at issue as a matter of principle. Following the above argument, legitimacy requirements can be said to differ depending on the type of standard in question. Regulative standards need a strong democratic legitimacy which they often derive from the political authority mandating the standard. The "burden" of achieving legitimacy rests on those who

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<sup>4</sup> Tamm Hallström (2004) deals with issues closely related to legitimacy of voluntary standardization in her analysis of the strategies of two SDO to establish authority and achieve compliance with standards.

impose the standard and not on the standard's source, no matter if it is an SDO, a single expert or a government department. Only if regulatory authority is delegated to an SDO the organization has to deal with legitimacy requirements directly.

In the case of coordinative standards the legitimacy requirement diverges according to their source. If they evolve in markets in an uncontrolled process of spontaneous adoption by producers and users of technology nobody can be held responsible for the economic and social effects and the standards are taken for granted. If a dominant firm pushes a standard, this company may be blamed morally (rather than legally), but it will usually not be expected to endow the standard with legitimacy. Only if the coordinative standard has been developed by an SDO and exerts some pressure of compliance the question of legitimacy of the standard, respectively the organization accountable for its development, arises.

Hence, the issue of legitimacy primarily surfaces in committee processes in SDO. Technical standardization in a SDO is essentially a deliberative process. It sets out to address a recognized need for collective decision-making. Stakeholders may allude to a need for improved coordination between different parts of the value chain to reduce transaction costs, for a modular decomposition of a technical system to provide more choices for the consumer, or for new safety features to reduce accidents. Participants in the standards committee legitimize their preferences in collective interaction with other group members. Technical issues are always involved in the discussions and technical reasoning often guides decision-making. But from the angle of democratic legitimacy of the process and its outcome, the plurality of less technical concerns – ranging from the commercial to the moral – may play an equally important role in collective deliberations. A

standard adopted by a committee exerts pressure to comply not only on the committee members but also on non-participants. In addition to this direct effect the standard usually has indirect or external effects. The direct and indirect effects will only be accepted or tolerated if the standardization process is regarded as legitimate.

How do SDO cope with the requirement of democratic legitimacy? If we look at the landscape of SDO we find different types of organizations which vary according to the geographical scope of their jurisdiction, their formal status, as well as to other features.

SDO can be national, regional or international in scope and they are official or unofficial (informal) organizations. The latter distinction is continuous rather than discrete. Furthermore, some of the national SDO have a regional or global significance.

The most prominent official international SDO (with national membership) are the standardization branch of the intergovernmental International Telecommunication Union (ITU-T), the international non-governmental International Standardization Organization (ISO) and its sister body, the International Electrotechnical Commission (IEC). Also at the regional level we have official SDO such as the European Telecommunications Standards Institute (ETSI), the European Committee for Standardization (CEN) and the one for Electrotechnical Standardization (CENELEC). The spectrum of official organizations is completed by national SDO which we find in all industrialized countries. Organizations such as the British Standards Institution (BSI), the Deutsches Institut für Normung (DIN), or the Association Française de Normalisation (AFNOR), are politically independent and formally non-governmental organizations, but they are accredited or recognized by governments. To some

extent governmental recognition lends legitimacy to an SDO.<sup>5</sup>

The majority of SDO are informal. They include national or international trade associations and professional organizations which, besides other more central activities, discuss and occasionally develop standards. The prevalence of informal standardization is most visibly indicated by the ever

industry and service sectors as well as research and education institutions.

The number of SDO is still growing and the landscape is steadily changing. The headline-trend can be summarized as a move from regulative to coordinative standards, from national to regional and international standardization and from intergovernmental and other official organizations to private

### Diagram 2: Prevailing institutional rules of standardization organizations

1. Participation is within certain membership rules open to those being substantially interested in the standards.
2. Usually members are organizations rather than individuals. Individuals are regarded as "delegates" of organizations.
3. The work is committee-based, cooperative and consensus-oriented. It follows formalized rules and procedures.
4. Organization and working procedures are impartial, unsponsored and politically independent ("due process"). The organizations are non-profit organizations.
5. The work is based on technological knowledge. It is not remunerated (voluntary).
6. Most standards are non-mandatory and public goods. However, they are not necessarily provided to the public free of charge (but on equal terms).

(Source: Werle 2001: 397)

growing number of private consortia. Most of them are vendor-driven and many disappear once a particular standardization task has been finished. Few informal SDO have had such a continuous significance as the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C) in the area of Internet standardization. Participation in the IETF and its numerous working groups is open to anyone and a broad and unrestricted discussion of proposals via electronic mailing lists is possible. W3C is a member organization which develops basically all standards for the web. Members are companies from the

consortia of standardization.<sup>6</sup> The proliferation of bodies has led to a degree of overlapping standardization activities which vie with one another for members and for getting their standards adopted. This competition between standards and standards bodies tends to heighten the importance of legitimacy where it might set apart a standard which is perceived to cater to a narrow set of proponent interests from a competing standard which lays claim to serve wider interests.

The proliferation trends indicate that despite undisputable diversity the SDO

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<sup>5</sup> Usually SDO are accredited on the condition that they provide for the representation of consumer, labour and other interests.

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<sup>6</sup> Mattli argues that the trend toward private consortia, he calls it "private governance" of standardization, has revealed limits and failings, including a lack of legitimacy, which have triggered moves toward "joint private-public governance" (Mattli 2003: 210).

show remarkable similarity concerning central institutional features (Diagram 2).<sup>7</sup> Apparently new organizations are designed according to the model of existing ones with respect to these features. This process of imitation and copying of organizational models, designated "mimetic isomorphism" by DiMaggio and Powell (1991), includes the bylaws and charters of many consortia, as well as the internal organization of work (Werle 2001).

The status of the standards which are developed by SDO is ambivalent as far as their legitimacy is concerned. Firms and users may not differentiate according to which organization a standard was adopted by as long as they regard a standard as beneficial and in this sense as "good". It is when the standard leads to detrimental effects that the legitimacy of the standard will be questioned. In this context the standard's origin and the democratic quality of the process of its development can be decisive.

Most institutional features included in Diagram 2 conform to the principles of a democratic decision-making process but they do not guarantee that they are fulfilled. Openness to participation for substantially interested actors (1), for instance, implicitly suggests that they do have access to standardization. But in most SDO work is not remunerated (5) and participants incur membership fees and travel expenses. Thus, engaging in standardization requires substantial financial resources and time.

#### 4 Input and output legitimacy

Current changes of the landscape of SDO, mainly driven by the increasing

number of consortia and the prominent role standards play in the changing regulatory environment, have triggered what can be called a competitive "market" for standards. This has repercussions for the strategies of SDO to achieve legitimacy for their products. We introduce the distinction between input and output legitimacy to address such strategies.

In the literature we find different variants of this distinction.

- Neo-institutional organization theory highlights two basic strategies to achieve legitimacy (Meyer/Rowan 1991). Organizations either put emphasis on the input and internal "production" side demonstrating the involvement of a variety of actors working in accordance with impartial and fair procedural rules in an open technical discourse. Or the organizations focus on the "quality" of their products (output) designed to the benefit of the addressees or the general public.
- A distinction introduced in the debates about deliberative democracy points in a similar direction. Institutions can involve more "aggregative" or more "deliberative" arrangements. The first are mainly based on aggregating interests through direct representation in the decision making process, while the latter put more emphasis on the justifications of collective choices (Cohen 1998: 186). Here organizations are required to provide the basis for inclusion of a pluralism of preferences and values.
- Institutional political theory most explicitly draws on the distinction between input and output elements in terms of achieving legitimacy (Scharpf 1999). It is argued that central pillars on which input legitimacy rests are direct participation of all affected by a rule (standard) and decision-making based on consensus. Output legitimacy, on the other hand, is achieved by

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<sup>7</sup> In a recent report it is maintained that in particular the larger long-standing consortia resemble the official SDO in many respects (NO-REST 2005: 75 ff.). Schoechle takes up a more sceptical position concerning the institutional similarity of official and informal SDO and the implications for legitimacy (2004: 149-214).

successfully dealing with problems which can only be collectively resolved. Among other things, that requires all interests to be considered (but not represented) in the definition of the collective interest. Thus, what is aimed at from the output perspective can be called "good" governance<sup>8</sup> or, regarding standardization, "good" standards. Ideally, such standards would be beneficial or acceptable to all who are affected by them regardless of their participation in the rule-setting process (Diagram 3).

the regional or global level – in international standardization where most committee standards with a global significance are adopted – only a minority of those interested or affected will be able to participate directly.<sup>9</sup> The question is whether this minority represents all those who cannot but, from an input perspective, should be present in a standardization committee.

The official international or regional SDO follow the principle of territorial representation with national SDO or other national representatives being

**Diagram 3: Modes of achieving legitimacy in standardization**

<p><b>Input legitimacy</b></p> <p>Focus on the "production" (standardization process)</p> <ul style="list-style-type: none"> <li>• Openness to and direct representation (participation) of all actors interested in or potentially affected by a standard</li> <li>• Work in accordance to impartial and fair procedural rules</li> <li>• Decision-making based on consensus</li> </ul>
<p><b>Output legitimacy</b></p> <p>Focus on the "product" (standard)</p> <ul style="list-style-type: none"> <li>• All "interests" are considered (but not directly represented) in the standardization process</li> <li>• External tracking and monitoring of standardization by stakeholder and advocacy groups</li> <li>• Decision-making in an open inclusive discourse (arguing) to the benefit of all standards addressees ("good" standards)</li> </ul>

SDO blend input and output criteria in their institutional design and in their operations. But particularly official SDO have traditionally put more emphasis on input legitimacy. A crucial principle here is openness. It requires that all affected individuals and organizations have the opportunity to get involved in the decision-making process. But this appears feasible only in a local (maybe national) context. At

their members. The national "delegations" are regarded as the voices and representatives of the aggregated and streamlined interests of all interested actors in the respective country. In principle, the international SDO adhere to the one-nation, one-vote decision rule which assures that every country (every national delegation) has a vote. If the question of legitimacy is limited to the aspect of territorial representation through national delegations and

<sup>8</sup> This concept has gained popularity in view of the European Union's "comitology" and the adoption of regulations by this committee system through a "deliberative" process in which "technical" expertise plays an important role (Joerges 1999).

<sup>9</sup> As indicated earlier, the prohibitive costs incurred by those being involved in international standardization in effect exclude interested parties from participating in standardization.

if the fiction is upheld that all affected interests are covered by these delegations the most significant requirements concerning input legitimacy of official international SDO are met. At the same time the burden assuring the involvement of diverse interests is shifted to the national organizations.<sup>10</sup>

Thus, national SDO have been the first to be confronted by the fact that many organizations and individuals with a legitimate interest in a standard usually do not participate in standardization despite their formal openness. Lack of resources, the collective action dilemma and other factors account for this deficit. This collides with the claim of the official SDO to develop standards which are dedicated to the public benefit. Early on many SDO tried to mitigate this deficit by involving different interests. Initially they stimulated user participation. But most users were big companies from industries such as media, finance, aerospace or defense and not small enterprises or consumers. In the 1970s, the SDO started efforts to promote the involvement of consumer, labor and later also environmental interests in standardization. Since the early 1990s, consumers have been represented in practically all national SDO in the industrialized world (Schepel/Falke 2000: 101ff). In many countries consumer representation is directly or indirectly financially supported by governments and also stipulated if the SDO want to be officially recognized. Typically special

consumer councils or consumer committees are established which monitor consumer relevant standardization work, investigate consumer concerns and develop standards proposals on this basis. That means on the other hand that representatives of consumer interests usually do not directly participate in the deliberations of a standards committee.

Compared to consumer interests the representation of other non-industry interests is less well institutionalized. The northern European countries as well as Germany and France who to some extent share a corporatist tradition, provide arrangements for the involvement of trade unions in standardization while such arrangements are lacking in other countries (Schepel/Falke 2000: 123). Mainly in Germany where, in 1975, the Trade Union Federation (DGB) called for a "democratic" process of standards development "some major progress" can be observed concerning labor interests representation especially if occupational health and safety issues are at stake. But out of some 26,000 experts involved in standards committees of the German DIN only one tenth of a percent represent employees (Bamberg 2003). Without financial support by the German government, representation would be even weaker.

Yet less favorable is the situation at the national level to environmental interests. In a few countries officials from environmental offices or ministries participate in standardization. In rare cases representatives of environmental groups are involved in the work of technical committees. The German DIN set up a coordination office for environmental protection. This office, funded by the government, examines standards at the draft stage (Schepel/Falke 2000: 126).

This illustration indicates that issues of territorial representation are irrelevant at the national level. Rather a kind of functional representation with

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<sup>10</sup> An official "Statement on Consumer Participation in Standardization Work" issued by ISO/IEC in 2001 illustrates this tendency to shift responsibility to the national level. ISO/IEC recognizes that "the interests of governments, manufacturers, all categories of users and consumers, and any others concerned, should be taken into account" and stipulates that "delegations to technical committee meetings should be in a position to represent all interests within their respective countries."  
<[www.iso.org/iso/en/prods-services/otherpubs/pdf/copolcparticipation\\_2001-en.pdf](http://www.iso.org/iso/en/prods-services/otherpubs/pdf/copolcparticipation_2001-en.pdf)>

an origin in corporatist thinking is seen to facilitate achieving legitimacy (Voelzkow 1996). The involvement in standardization of a variety of non-industry interests, in the first place consumer, to some degree also labour interests, has gained importance, whereas environmentalists have to struggle to create awareness in standardization. Other interests and perspectives play an even weaker role.

Given these asymmetries at the national level one cannot expect national SDO to provide regional or international SDO with unbiased input. But these organizations have increasingly ceased to rely on national input anyway. In particular in ICT, the traditional bottom-up process of feeding national standards into supranational committees which then negotiate an international standard on this basis has been undermined by the shift of generic standardization to regional and international SDO (Büthe/Witte 2004). At the same time standardization has moved towards the early stages of technological design (*ex-ante* standardization). At the working level – where standards are developed, tested and negotiated – the regional and international SDO have abolished the principle of territorial representation and are open to direct membership of firms, R&D institutes, business associations, government departments and other corporate actors. National SDO only transpose into national standards what has been developed internationally. As a consequence the regional and international SDO have to respond to legitimacy requirements of the same type as the national SDO and they do so in the same way emphasizing functional representation and openness. But the barriers to including non-industry interests are even higher at the supranational than at the national level.

Again consumers' interests are more effectively represented than other non-industry interests. In Europe where the European Commission has tradition-

ally mandated many standards and tried to shape the institutional landscape of standardization the Commission contributes to funding the European Association for the Co-ordination of Consumer Representation in Standardization (ANEC) which is based on a network of more than 200 consumer representatives across Europe. ANEC is an associated member of the European Committee for Standardization (CEN). At the international level the ISO set up the Committee on Consumer Policy (COPOLCO) in 1978 "to ensure that the voice of the consumer is heard in the development of standards" by selecting areas that are of priority to consumers and coordinating participation of consumer representatives in the technical committees developing standards in these areas.<sup>11</sup>

Labour interests in standardization are often represented by trade unions. At the European level unions mainly focus on health and safety standards which are often mandated by the European Commission and have the character of binding regulations. In 1989, the European Trade Union Confederation (ETUC) set up a Technical Bureau for Health and Safety (TUTB) which became an associated member of CEN in 1993.<sup>12</sup>

Participation of environmental groups in European standardization has a rather short history. Early efforts of the European Environmental Bureau (EEB), a Federation of Environmental Citizens Organizations, to get involved in standardization failed, partly due to a lack of funding by the European Commission of a technical bureau which was designed to organize direct

<sup>11</sup> <[www.iso.org/iso/en/comms-markets/consumers/iso+theconsumer-04.html](http://www.iso.org/iso/en/comms-markets/consumers/iso+theconsumer-04.html)>

<sup>12</sup> In April 2005, the TUTB merged with the European Trade Union Institute (ETUI) and the European Trade Union College (ETUCO) – to become the European Trade Union Institute for Research, Education and Health and Safety (ETUI-REHS). Now this new organization is an associated member of CEN.

involvement of environmentalists in standardization. Instead, the European Environmental Citizens Organisations for Standardisation (ECOS) were awarded an EU contract, starting on November 1, 2002, which facilitates the coordination of input of environmental organizations into standards work. ECOS is a membership organization, open to non governmental organizations (NGO) active at a European or a national level. Assisted by the EEB, ECOS sends experts to technical committees and working groups of the European SDO. It is associated member of CEN and cooperating partner of CENELEC.<sup>13</sup> At the international level we find, for instance, IEC's Advisory Committee on Environmental Aspects (ACEA) which was created in 1994. In a recently published document ACEA draws the attention of the designers of electrotechnical products to the need to integrate environmental aspects into the product design. Another document concerning the inclusion of environmental aspects into product standards explicitly addresses the technical committees which develop them.<sup>14</sup>

## 5 Toward output legitimacy

Different formats have been chosen by the SDO to facilitate participation of consumer, employee, and environmental groups in standardization. In some instances, group representatives have direct access to the committees in which the detailed standardization work is done. In other cases special committees have been set up in the SDO to monitor and track the standardization work and to provide input

into the working committee process if and when it appears necessary. Again in other cases, experts from consumer, employee or environmental groups are members of the boards of standardization organizations where they have the opportunity to draw attention to the interests and values they represent but cannot feed them directly into the standardization work.

But consumer groups and, to a greater degree, the other groups stress the lack of funds and other resources as a continuing obstacle to effective participation in standardization (Scheffel/Falke 2000: 111-127). Another problem is the narrow focus of expertise of most experts who are delegated by a consumer, environmental or employee group into a standardization committee. Usually not all aspects of a standard are covered by a single expert. More serious is the issue of appropriate representation of the groups' interests and perspectives because it is difficult to establish that the view presented by the expert who represents a group is in fact the collective view (Hawkins 1995). As a consequence direct involvement of experts from consumer, employee and environmental groups in the SDO often fails to meet the expectations these groups associate with it.

Direct participation in the process of standards development and, if possible, also proportional representation by the participants of the plurality of non-industry interests and values would perfectly meet the requirements of input legitimacy. There is broad consensus that without public funding and other support, non-industry interests would not be represented in the standardization process at all. But one can have doubts that further efforts to "pro-actively support participation of relevant stakeholders in standardisation work at the national, European, and international levels" will really have the effect

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<sup>13</sup> <[www.ecostandard.org/about\\_who\\_we\\_are.php](http://www.ecostandard.org/about_who_we_are.php)>

<sup>14</sup> IEC Guide 114: "Environmentally conscious design – Integrating environmental aspects into design and development of electrotechnical products" (Geneva, 2005) and IEC Guide 109: "Environmental aspects – Inclusion in electrotechnical product standards" (Geneva, 2003).

expected by the European Commission and other political authorities.<sup>15</sup> A look at standards development for the Internet confirms this view. Internet standardization has established itself completely detached from the official SDO as well as from the prevailing industry standards for networks (David/Werle 2000). The Internet Engineering Task Force (IETF) is more open and inclusive than any other official or informal SDO (Froomkin 2003). Only individuals (and not firms or other organizations) can be "members" of the IETF and most of the work is done via inexpensive electronic means of communication. But the expectation that these features attract many individuals with non-technical and non-industry interests and concerns has been disappointed. "By and large, vendors, service providers, and to a lesser extent, academia dominate the lists and the meetings" while users, for instance, "are as under-represented on the distribution lists and at the meetings as they are on ITU-T and OSI committees" (Jakobs 2000: 157).

Thus, achieving legitimacy through direct participation in standards committees is not only contingent on the openness of an SDO and the availability of public funding but also on the prevailing rules and principles governing the process of the development of standards. Of special interest in this context is the consensus principle which guides decision-making at the working level of standardization and is shared by virtually all official and informal SDO (see above Diagram 2). Consensus, essential for input legitimacy, is difficult to accomplish. Although it is not the same as unanimity and practices have evolved in many SDO to arrive at consensus this principle affords veto power to every indi-

vidual involved. Thus, a tension between legitimacy through consensus and efficiency in terms of adopting many standards quickly is undisputable (Rada 2000).<sup>16</sup> The more diverse the interests involved in a standards committee are the more difficult it is to forge consensus. This is one reason why several informal SDO, consortia in particular, target industrial parties but hesitate to involve other stakeholders and participants as they might increase diversity (Werle 2001). But also in this respect the difference between official and informal SDO is one of degree rather than principle (Egyedi 2001).

The obstacles to direct participation of non-industry interests are multiplied if not only stakeholders such as consumers or labor but also civil liberties organizations and public interest groups are to be involved in standardization – a requirement that suggests itself from the point of view of the legitimacy of standards.<sup>17</sup> More than consumer or employee groups these organizations strive for technical solutions including standards which secure openness of technical systems, help protect privacy and provide for "democratic" elements in the design of technical systems in particular in ICT. Adding public interests groups to the circle of actors actively involved in

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<sup>16</sup> New participants in the working groups of the IETF read the following instructions: "The general rule on disputed topics is that the Working Group has to come to 'rough consensus', meaning that a very large majority of those who care must agree. The exact method of determining rough consensus varies from Working Group to Working Group. The lack of voting has caused some very long delays for some proposals, but most IETF participants who have witnessed rough consensus after acrimonious debates feel that the delays often result in better protocols." (<[www.ietf.org/tao.html#9.1](http://www.ietf.org/tao.html#9.1)>)

<sup>17</sup> Stakeholders are understood here as persons or groups with a direct *economic* interest, involvement, or investment in something, for example, the employees, shareholders, and customers of a company.

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<sup>15</sup> General guidelines for the cooperation between CEN, CENELEC AND ETSI and the European Commission and The European Free Trade Association 28 March 2003. Official Journal of the EU 2003/c 91/04: 7-11, p. 10.

standardization increases the inclusiveness and the democratic quality of the process. The heterogeneity of interests and values is appreciated from a legitimacy perspective but if they are directly involved in standardization the result may be inefficiency, delay and deadlock of the process. Also, affected companies may try to bypass the respective SDO and turn to more exclusive ones.

A response of many SDO to this problem has been to put more emphasis on output than on input legitimacy of standardization. What counts at the end of the day is to issue standards which are accepted by the addressees or the general public as beneficial or at least as not harmful no matter how the details of the standardization process have been shaped. However, considering the possible positive and negative externalities of a standard, the "market test" (diffusion in the market) is not sufficient to establish its benefit. Developing a "good" standard requires facilitating access to SDO of as many diverse interests and values as necessary to assure that all relevant technical, commercial, socio-economic and socio-political aspects are appropriately taken into account. But it does not require that they are directly and proportionally represented in the standardization process by advocates and other representatives of these interests and values.

Although we claim here to observe tendencies of many SDO to put emphasis on achieving output legitimacy, we are not arguing that this indicates an encompassing general trend. It would also be misleading to infer that the SDO acknowledge a kind of functional imperative if they shift emphasis into this direction. Rather external pressure originating from three sources has been exerted on them, especially on the official SDO, to more explicitly consider the legitimacy of their standards and search for an adequate strategy to cope with this requirement.

1. In the first place policymakers and regulators have called for strengthening the legitimacy of standards. One step has been that many countries require formal public inquiries during the adoption of national standards by the official SDO. Also, in particular in the EU – resulting from the New Approach to Technical Harmonisation (in 1985) which spelled out that harmonized standards virtually always include regulatory components – the official SDO had to formally recognize the need to involve public interests into the standard setting process. As early as 1984, this was put forth in a joint memorandum between the political authorities and CEN and CENELEC. But the way of how to involve "public authorities, manufacturers, users, consumers, trade unions" and other groups effectively in the drawing up of European standards was left open.<sup>18</sup>
2. More general pressures can be associated with the dynamic market for standards.<sup>19</sup> The efficiency argument traditionally made to legitimize streamlining the standardization process by circumventing "superfluous" interests has to a certain degree been turned around. Initially competitive pressures have made a standard in line with consumer preferences more successful on this market than one that reflects the narrower commercial interests of business. Recent developments in ICT suggest that standards which have been adopted in a

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<sup>18</sup> General Guidelines for Cooperation between the European Commission and CEN and CENELEC, agreed on 13 November 1984, and published as CEN/CENELEC Memorandum No 4. <[www.cenorm.be/boss/production/production+processes+-+index/candidate+harmonized+standards/cclcgd004.pdf](http://www.cenorm.be/boss/production/production+processes+-+index/candidate+harmonized+standards/cclcgd004.pdf)>

<sup>19</sup> A qualified indication is that there are around 400 standards bodies currently in operation. See the Consortium and Standards List at <[www.consortiuminfo.org/links/](http://www.consortiuminfo.org/links/)>

more pluralist environment are perceived as equitable and therefore more appealing on this market.

3. A third set of pressures involves the activities of advocacy and interest groups. The advent of such grass-root civil liberties and public interest groups is linked to the emergence of ICT systems and their potential opportunities and risks. They have directed attention to technical standards which coordinate and regulate the development and use of the systems. These groups and their interests and values could no longer be ignored by the SDO which organizationally responded in various ways to these new pressures.

## 6 Reframing standardization

Achieving output legitimacy requires successfully integrating a great plurality of interests and values in the standardization process without necessarily requiring the direct participation of the respective stakeholders and advocates. This means that in effect the cognitive and normative frame in which the deliberations on standards take place must be broadened.

That the cognitive and normative frame of a collective decision-making process has an influence on the outcome has been shown in many experimental and "real world" studies in different traditions of social theory. In Goffman's seminal analysis frames are defined as basic cognitive structures which guide the perception of reality. They are adopted in a communicative process (cf. Goffman 1974). Frames promote particular problem definitions, causal interpretations and moral evaluations and they influence individual and collective decisions. Tversky and Kahneman (1985) demonstrate the behavioral effects of different frames in experiments which show that economic choices are controlled by the formulation of a problem as well as by habits, norms

and values. In the early 1990s, frame analysis made inroads in policy studies. Frames are seen as constituting policy issues and at the same time providing guideposts for analyzing, persuading and acting on them (Rein/Schön 1993). Frames can change in discursive deliberations but in a stable institutional setting a new dominant frame does not replace previously legitimate frames (cf. Surel 2000).

For a long time, the cognitive frame of the standards developing process was a technical one. Standardization was perceived as a search process aiming at finding the technically optimal solution which then was easy to agree upon. The technical discourse among engineers prevailed and non-technical arguments tended to be considered illegitimate. Since the 1970s, this discourse has increasingly been supplemented in some and marginalized in other SDO by a business oriented commercial discourse.<sup>20</sup> Strategic commercial interests are argued in light of firm-level capabilities, complementary assets, any installed consumer-base, and of course the prospect of new customers. Thus, competitive concerns and profit interests are generally regarded as legitimate by the actors participating in standardization (Schmidt/Werle 1998). This shows that it is possible, in principle, to change the cognitive and normative frame of the standardization discourse and it has encouraged SDO to try to include other elements which direct the standards committees' attention toward non-technical and non-commercial issues.

The SDO gathered some experience with environmental implications of standards which, if at all, are usually

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<sup>20</sup> An indication that the technical discourse has still some relevance is provided by the IETF's widely cited philosophy: "We reject kings, presidents, and voting; we believe in rough consensus and running code." In this reading standardization is about finding not necessarily the best but a technically reasonable ("running") solution.

revealed in a late stage of the development of a standard – too late to intervene in the process. As a consequence SDO such as the DIN in Germany or the European Committee for Standardization (CEN) established an Environmental Helpdesk with the task to advise and support the standardization committees considering environmental aspects. CEN has issued "Environmental Guidelines" to ensure the best possible incorporation of environmental aspects.<sup>21</sup> It is emphasized by CEN that the integration of environmental aspects in standards is a voluntary instrument to achieve environmental goals. But at the same time CEN requests that "every work item should include an assessment of the environmental aspects as early as possible in the process. It should preferably be done between the stage of approval of a work item and the stage of circulation of a first document at the latest, in order to avoid delays in standardization process."<sup>22</sup> We already mentioned comparable developments at the international level but what we want to emphasize here is that SDO continuously try to feed environmental aspects into the cognitive and normative frame of the standardization process. These efforts are reinforced by a significantly growing public interest for the environment.

Another notable attempt – initiated by public policy agents – aims at integrating the specific needs of "minorities" such as handicapped people in the standardization process. Traditional design of technology in effect excludes the handicapped. On the other hand the group of the handicapped and their

needs are very heterogeneous, because this category spans a wide range of individuals from those with impaired vision, to those with different types of other functional disabilities. For that reason direct participation of handicapped in standardization would always imply selective rather than encompassing representation.

In several countries public agencies support relevant research and development and influence companies to consider these needs in the design and standardization of technology. One case in point is Norway which launched the "Information Technology for the Disabled (IT Funk)" program. This long term attempt shall affect standardization at the national and the supranational level in order to improve the conditions for the disabled mainly in terms of accessibility to ICT systems and services.<sup>23</sup> The other Scandinavian countries are involved in similar actions. The "Danish Centre for Assistive Technology" provides input into ETSI, CEN and ISO and tracks standardization processes from the angle of the needs of handicapped people. All Nordic countries run laboratories which test products but also propose European standards from this angle and provide feedback into standardization.<sup>24</sup>

Official SDO, in particular, have reacted to the emerging initiatives and pressures by either issuing guidelines for standard-makers on how to take into account the needs of disabled people<sup>25</sup> or setting up a special committee which is responsible for guidelines and standards that deal with requirements of disabled people (ETSI HF).

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<sup>21</sup> The CEN "Guide for the inclusion of environmental aspects in product standards" (Guide 4) was issued in 1998 and revised in 2004.

<sup>22</sup> CEN: Guidance – Consideration of environmental aspects in standards, version 1 (January 2005)  
<[www.cenorm.be/boss/supporting/guidance+documents/gd050+-+environmental+aspects+in+standards/index.asp](http://www.cenorm.be/boss/supporting/guidance+documents/gd050+-+environmental+aspects+in+standards/index.asp)>

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<sup>23</sup> <[www.itfunk.org/docs/engpres.html](http://www.itfunk.org/docs/engpres.html)>

<sup>24</sup> <[www.hmi.dk/index.asp?id=482](http://www.hmi.dk/index.asp?id=482)>

<sup>25</sup> See Guidelines for standards developers to address the needs of older persons and persons with disabilities (ISO/IEC Guide 71, 2001) and the European equivalent issued by CEN/CENELEC (Guide 6, 2001).

More recent developments indicate that awareness creation has shifted to the encompassing issue of how the interests and needs of all types of minority groups linked to the use of technology can be considered in standardization. Efforts in this direction emphasize the "design for all" principle. If this principle is taken into account in the standards development process the likelihood increases that the resulting standards are acceptable to all who are directly or indirectly affected by them. They may even help avoiding problems such as computer illiteracy and the "digital divide". The idea to influence the design of technology by promoting design for all principles in standardization emerged in the USA in the 1960s. The American National Standards Institute (ANSI) adopted "universal design" principles in 1961. In the following decades the idea slowly diffused to Europe and South-East Asia. A new bibliography on design for all principles indicates that more than 50 documents of different types produced by official supranational SDO address ways to include such principles in the deliberation on standards (Olsson/Lyhne 2005).

ANEC and other consumer associations strongly support design for all priorities. These principles have a root in consumerism but they are also rooted in the US civil rights movement. Based on the tradition of these movements new civil society and public interests groups have emerged which have become aware of the societal significance of technical standards. The Internet, in particular, has stimulated a broad debate regarding the democratic legitimacy of standardization in the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C) (Froomkin 2003; Russell 2003). More than in other contexts of standardization, general aspects of democracy rather than special consumer, employee or environmental interests are emphasized in

this debate. Among the few public interests and civil society groups which highlight the significance of standardization is the Center for Democracy and Technology (CDT). This advocacy group has most actively struggled for the consideration of individual civil rights and civil society values in Internet standardization. In 1996, the CDT set up the Internet Privacy Working Group which initiated the development of technical privacy specifications in the W3C. Some members of the working group participated in developing the Platform for Privacy Preferences (P3P) standard.<sup>26</sup>

In an analysis of the experience gathered during this activity – but also in several cases in the IETF – the CDT points to the limitations of direct participation of public interest advocates in standardization (Davidson et al. 2002; Morris/Davidson 2003). Direct ongoing participation is regarded to be most effective, as in the case of P3P, but extremely time and resource intensive and, thus, not feasible as a standard operating procedure. But also the less resource-consuming ad hoc mode of participation is considered to be of limited usefulness because the public interest advocates retain the role of an outsider whose suggestions can easily be dismissed by the committee. An alternative to direct participation is seen in monitoring and tracking the work of standards committees by the public interest community. The CDT developed instructions ("ritualized public policy impact assessments") to be followed if standardization processes are monitored. This and other documents – characteristic of the efforts to broaden the cognitive and normative frame of standardization – aim at creating awareness of potential policy impacts of standards. They address different areas of public policy

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<sup>26</sup> This standardized technology communicates the privacy policies of web sites to the users that connect to them (Cranor 2002).

concern, ranging from "Content Censorship and Control" to "Personal Privacy."<sup>27</sup> They shall be addressed by the standard developers when they design new technologies.

Taken together, these illustrations indicate that broadening the cognitive and normative frame of standardization is a promising option for SDO in a situation in which they have started to stress output legitimacy in response to the pressure to strengthen the legitimacy of standards. Reshaping the normative and cognitive frame of standardization is in itself a deliberative process in which ideally individuals with diverse interests, preferences and values should be involved (Hamlett 2003: 132). But this appears unfeasible in standardization, especially at the European and international level. Strategies to create advisory groups which monitor and occasionally intervene into the work of standardization committees and to issue guidelines which draw attention to issues usually not considered by these committees are at least one step toward reframing standardization. A broadened cognitive and normative frame makes it possible – but by no means guarantees – that non-industry interests and values are considered. They are not directly represented in the standardization committees but may be "invoked" by the members (cf. Feng 2005).

## 7 Conclusion

Adopting technical standards makes up a crucial step in the process of developing technology. It often takes place in company labs hidden from the public. A significant number of standards are developed in SDO. Company standards provide input into this process. They are voluntarily disclosed because the companies expect to

benefit from the agreement on a common standard in the SDO. Participation in standards development is time-consuming, resource-intensive and requires technical expertise. Taken together it is not surprising that the majority of participants in standardization are agents of firms. Given the plurality of interests and values in society these agents are definitely not representative. The bias towards industry interest representation is – with few exceptions – strongest at the international level, where even small and medium-sized enterprises are absent, not to mention non-industry interests and values. The SDO are aware that this bias calls the legitimacy of standards into question – regulative (mandatory) and coordinative (voluntary) standards alike.

The institutional rules of committee standardization, in particular the relative openness and transparency of the process, in principle, attract participation by actors and groups interested in or affected by a standard. But without public funding and without pressure on the SDO consumer, employee and environmental as well as minority, civil society and public policy interests would usually not be considered in standardization.

Two (not mutually exclusive) options are available to achieve legitimacy of standardization by including non-industry interest and values. One option is to put emphasis on the input side of the process trying to balance interest and value representation through direct participation of all affected or interested groups. Apart from the high costs, direct participation would likely result in complexity overload and deadlock in the committees which are expected to decide on the basis of consensus. The overloaded SDO would be bypassed by industry and standardization would migrate from official and de-facto recognized informal SDO such as the World Wide Web Consortium into exclusive private consortia.

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<sup>27</sup> Concerning the work of the IETF: Public Policy Considerations for Internet Design Decisions <[www.cdt.org/standards/draft-morris-policy-considerations-00.pdf](http://www.cdt.org/standards/draft-morris-policy-considerations-00.pdf)>

Partly because of these problems – but also partly as a consequence of an increasing number of interest and advocacy groups which claim to be directly or indirectly affected by the standards – the SDO have started to shift emphasis toward output legitimacy. The efforts to arrive at standards beneficial or acceptable to all affected vary with regard to their specific starting-point. But they share the aim to stimulate participants in standards developing processes to consider potential non-market and non-technical impacts of standards. They aim at broadening the cognitive and normative frame of the standardization discourse and creating awareness of a standard's implications without requiring direct participation of advocates and representatives of non-industry interests and values. This is mainly facilitated by guidelines for standards committees which promote the inclusion of non-market interests and values into the standardization discourse. In addition, special committees from outside or special boards within the SDO monitor and review the work of the standards committees and return an assessment to them. The ultimate aim of all these measures is creating good standards endowed with some form of democratic legitimacy.

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