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# Vulnerabilities of European telecommunication systems and the EU's concerns about ETSI's legitimacy – a proposal for value-based standardization

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Telecommunication systems can only function properly with standards that ensure interoperability. Consequently, these standards shape the systems. However, the European Commission (EC) is concerned that foreign (e.g. Chinese) companies are influencing and shaping European telecommunications through their participation in committees of the European Telecommunications Standards Institute (ETSI). The EC wants ETSI to ban non-European firms from co-deciding about critical standards. This paper discusses the EC's concerns by examining ETSI's practices from a historical perspective and discussing the concept of legitimacy. Our findings demonstrate that this ban is unsuitable for reaching the EC's objectives. We develop an alternative by separating decisions about standards to be used in Europe from ETSI's standard development process. This way, ETSI can continue to involve companies from China and other countries outside Europe, but there will be an additional step for acceptance of telecommunications standards: Europeans will decide which standards to adopt, using value-based criteria. This approach would address the EC's concerns much better than the solutions they originally envisioned, while still allowing ETSI to maintain its global relevance. This approach is novel in the literature on standardization. Moreover, this study shows that combining the different forms of legitimacy provides a more comprehensive framework for analyzing standardization.

**Keywords:** standardardization; telecommunication systems; vulnerabilities; ETSI; European commission; legitimacy; China

## 1. The EU's concerns about ETSI: China co-shaping European telecommunication systems

The European Commission (EC) focuses on creating a resilient, green, and digital European single market in its policies. Standards support this goal (EC 2022a). In this regard, the European Telecommunication Standards Institute (ETSI) is a major player in this digital market. However, the EC is concerned about foreign influences, particularly from China, and is calling for better governance of standards in Europe, especially for telecommunications. More specifically, the EC questions ETSI's legitimacy because its

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procedures allow foreign involvement. This paper aims to clarify this situation by combining a historical perspective with the literature on legitimacy and modes of standardization and by suggesting a solution and a way out for both ETSI and the European Union (EU).

In their standardization strategy document, the EC (2022a) recognizes the strategic importance of standardization. However, '*While European standardisation has been a success story for the establishment of the EU's single market, the strategic importance of standards has not been adequately recognized at the cost of EU leadership in standards-setting. This must change*' (EC 2022a, 1). The EC reconfirms the 'privileged and prominent' role of the European Standardization Organizations (ESOs): the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC), and ETSI (EC 2022a, 3). However,

> This special status comes with responsibilities. (…) The Commission is concerned that today's decision-making processes within the European standardization organisations, in particular ETSI, allow an uneven voting power to certain corporate interests: some multinationals have acquired more votes than the bodies that represent the entire stakeholder community. This is why the Commission believes that administrative and good governance principles need to be put in place when the European standardization organizations act upon European standardization requests and develop standards used to show compliance with rules imposed in the interest of EU citizens. (EC 2022a, 4)

The latter does not apply to all standards, only to those referred to in European legislation.[1] The EC intends to prescribe that decision-making should be limited to delegates of national standards bodies (NSBs) during each stage of the standards development process. It wishes for Europe to take the lead, particularly in sensitive areas, to have a higher representation of Small and Medium Enterprises (SMEs) and societal stakeholders, to speed up standards development, and to improve the link to EU-funded pre-normative research.

> The EC is committed to making the European standardisation system more functional and agile, to deliver on the standards that make our industries more competitive, serve the EU's public interests, promote sustainability, and preserve and reinforce democratic values' (EC 2022a, 9). (…) With this strategy, the Commission underpins the EU's role as a global frontrunner in the development of standards, supporting EU values and providing industries with a competitive edge. (EC 2022a, 10)

There is an inherent tension between promoting EU values and maintaining the competitive edge for industry. For instance, while EU values support sustainability, some sectors of the industry lobby against sustainability measures.

The EC is more critical of ETSI than of CEN and CENELEC. During a meeting about the new EC strategy that the author attended,[2] it was expressed that this is due to perceived Chinese influence in ICT standards setting. The Chinese company Huawei was said to have more lobbyists in Brussels to influence European standardization than any other company.[3] Interestingly, the EC's emphasis on sustainability and values contradicts its focus on taking 'leadership' in the form of a power-play against other countries or regions, highlighting an inconsistency in EU policy.

This paper proceeds as follows. First, we place ETSI's role in a historical perspective. Then, we present insights from the literature about legitimacy and standardization. Next, we position the concerns of the EC in terms of the theory and conclude that its proposals are likely to fail. Finally, we propose an alternative way to address the EU's concerns by separating standards development from standards acceptance, and by suggesting value-based criteria for acceptance.

## 2. ETSI in a historical perspective

Without standards, there is no telecommunication. When Party A sends a signal to Party B, B must be able to receive and interpret this signal. Standards are a prerequisite for telecommunication as they enable interoperability. However, other standards, such as those related to quality, safety, and information security, may also be relevant. Telecommunication can interconnect people worldwide and is the oldest institutionalized area of international standardization (see Table 1).

Most companies operate either in local, national, or international markets. The European level is an artificial level for political reasons. Indeed, the ESOs came into being due to political pressure (Czaya 2007). Below we provide an overview of European standardization, with a focus on ETSI. First (Section 2.1) we discuss the raison d'être of formal standardization at the European level, followed by the three ESOs: CEN (2.2), CENELEC (2.3), and ETSI (2.4). Next, we explore the political and cultural context of European standardization (2.5), and finally we relate the EU's standardization strategy to three trends (2.6).

### 2.1. *Roots of European standardization*

The roots of European standardization are not in industry but in the Marshall Plan (Abécassis 1995). In the early 1950s, the European Organization for Economic Co-operation (OEEC), a subsidiary body of the Marshall Plan, invited representatives from national standardization organizations in Europe for a meeting in Paris to discuss cooperation in the field of standardization to increase economic integration in Europe. Since then, they have met annually (Abécassis 1995; Czaya 2007; Hesser and Czaya 2010). The initial idea was to develop and unify standards of public interest and improve implementation, with national and international standards bodies responsible for the technical work. The French proposed integration within the framework of the European Economic Community (EEC), established in 1958. Non-member countries disagreed and founded the European Free Trade Association (EFTA) in 1960, which caused political tension between EEC and EFTA countries (Abécassis 1995; Czaya 2007; Hesser and Czaya 2010).

### 2.2. *CEN*

To intensify European cooperation in the field of standardization the Comité Européen de Coordination des Normes (later: Comité Européen de Normalisation) (CEN) was created in 1961, and its members were the national standardization organizations in both EC and EFTA member countries. CEN was reluctant to develop standards but promoted the development and application of ISO standards. CEN's first standard, EN 2, was published in 1972. The massive production of European standards started in the early 1970s when the EC requested specific standards that it could refer to in its directives (Abécassis 1995).

Table 1. International and European formal standards developing organizations and year of their founding.

| | Standardization field | | |
|---|---|---|---|
| Level | Telecommunication | Electrotechnology | Other |
| International | ITU (1865) | IEC (1906) | ISO (1947) |
| European | ETSI (1988) | CENELEC (1959) | CEN (1961) |

### 2.3. *CENELEC*

CENELEC's predecessor, CENELCOM, was set up in 1959 by the EEC countries Belgium, the Netherlands, France, Germany, and Italy. In 1960, the CENELCOM members, together with Luxembourg and the EFTA countries (at that time) Norway, Sweden, Denmark, the UK, Switzerland, Austria, and Portugal, set up the CENEL cooperation to discuss IEC standards and to find out, by means of questionnaires, to what extent these standards were being uniformly implemented within the 13 countries. Soon after, Finland joined as well, and other countries later followed (De Vries 2015). CENELEC has always focused on the joint adoption of IEC standards. The number of 'own' CENELEC standards is limited. CEN and CENELEC both use a country model: their technical work is mainly channeled via national member bodies that organize 'mirror committees' in which national stakeholders are represented.[4]

### 2.4. *ETSI*

The third European Standardisation Organisation, ETSI, was founded in 1988. From the outset, standardization for telecommunication was an international activity. The International Telegraph Union (ITU) was founded in 1865 and renamed the International Telecommunication Union in 1932. In 1947, it became a specialized agency of the United Nations. Telecommunication networks used to be in the hands of state telecommunications and postal organizations (PTTs). Nineteen of these PTTs created the Conférence Européenne des Administrations des Postes et Telecommunications (CEPT) in 1959. CEPT became responsible for the coordination of telecommunication standardization in Europe. In the 1970s and 1980s, they took steps to exchange views with industry (Chauvel 2004). The topic of functional standards (FSs), which provide a chosen set of functionalities from the options given in the Open Systems Interconnection (OSI) model (Jain and Agrawala 1990), led to competition between CEN, CENELEC, and CEPT, each claiming this area. The EC and EFTA convinced them to cooperate on this issue, and they created the Information Technologies Steering Committee (ITSTC). However, the national delegation system of CEN and CENELEC and the PTT membership of CEPT did not allow direct industry participation, which triggered the creation of the European Workshop for Open Systems (EWOS). The EU asked EWOS to develop European FSs (Chauvel 2004). Neither OSI nor FSs became successful in the market (Cargill 1994), but this form of cooperation in standards setting was seen as appropriate for the ICT field and influenced a *Green paper on telecommunications* in which the EC (1987; 1988) proposed to introduce competition in the telecom market and to ensure interoperability through standardization. An independent European telecommunications standards institute was proposed to ensure the timely development of the necessary standards. The creation of this body caused another battle between CEN, CENELEC, and CEPT. CEPT finally managed to establish ETSI in 1988. In 2012, the EU formally recognized ETSI as an official European Standards Organisation (ESO), next to CEN and CENELEC (European Parliament and Council 2012), giving ETSI a formal status (Chauvel 2004).

### 2.5. *Political and cultural context*

The main reason for the EU's recognition of the ESOs was that standardization constituted an essential instrument for achieving a single European market without trade barriers. This

was important from an economic perspective but also in relation to European values. The EU and its predecessors were founded to build a new Europe without war. This would be achieved by making countries dependent on each other economically. For Robert Schuman, one of the founding fathers, it was more than just that; Europe would be built on ideals stemming from Christianity (Luitwieler 2018). Ideals such as freedom, equality, solidarity, community, diversity, peace, and reconciliation played an important role in striving for European unification. A European single market without trade barriers was created to serve this purpose, and standardization was a core instrument to achieve this because standards that differed from country to country created non-tariff barriers to trade (World Trade Organization 2005). In contrast to the short-term Anglo-Saxon model (Muresan 2014), consensus-based standardization relates to the Rhineland model, which emphasizes cooperation, consensus, social justice, serving the interests of multiple stakeholders, and the long-term sustainability of enterprises (Avery and Bergsteiner 2013). These political and cultural arguments for European standardization come on top of the recognition of standards' importance for efficiency and effectiveness of processes and a level playing field for competing providers of products and services – the latter recognition is shared with other regions in the world and is best served with international standards (De Vries 2015).

Indeed, globalization has created a new situation in telecommunications: many companies operate globally. They need standards and are confronted with different standardization cultures and systems. They tend to switch pragmatically between the different modes of standardization (Wiegmann, de Vries, and Blind 2017). In this context, it made sense for ETSI to move from being almost exclusively European towards a more international orientation. In 1990, ETSI membership rights were expanded to any country in the world by allowing organizations from countries outside the CEPT area to become associate members (Chauvel 2004). These associate members have voting rights, except for matters related to European regulation, policies intended to meet the needs of the European Union, and work programs that apply exclusively within the European Union (ETSI 2022).

### 2.6. *Current trends*

In this context of globalization, the EU's standardization strategy reflects three other trends. The first is the increase in the societal importance of standardization, in terms of the stakes involved (e.g. environmental issues) and related stakeholders (e.g. environmental pressure groups). The second is the shortening of product life cycles and time to market and the increasing prominence of intellectual property rights, and the third relates to the increased interrelatedness of technologies, processes, products, and services combined in complex systems. Standards are of utmost importance when providing the interfaces within and between such systems. However, it is increasingly difficult for individual players to take the lead in standardization trajectories. These trends may be a reason for standards bodies, including ETSI, to reconsider how they operate. The EU challenges them to do so by questioning their processes.

## 3. Legitimacy

Legitimacy is 'a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions' (Suchman 1995, 574). In the case of ETSI, at least one

stakeholder, the EC, questions the practices of ETSI. In a standardization context, both practitioners and researchers tend to relate legitimacy primarily to stakeholder representation. This is a recurring issue in European policy documents (Commission of the European Communities 1991; European Commission 2022a). However, stakeholder representation has continued to be unbalanced (e.g. Van Elk and van der Horst 2009). A failure to achieve adequate stakeholder representation questions the premise that a standard represents 'voluntary consensus' (Hawkins 1995, 158). The participation of a broad variety of stakeholders may thus contribute to the legitimacy of the standard development process and the resulting standards (Lundvall 1995; Scharpf 1999) and, therefore, to the likelihood of higher market acceptance. Broad stakeholder participation is a prerequisite for some standards (Cashore, Auld, and Newsom 2004). Standards forced by market conditions or government regulations and considered legitimate by the market may cause less implementation and enforcement resistance (Bernstein and Hannah 2008; Fomin, Pedersen, and De Vries 2008; Garcia 1992). However, in cases without enforcement, a standardization initiative relies mainly on legitimacy to ensure compliance (Schouten and Glasbergen 2011).

The involvement of multiple stakeholders is assumed to contribute to both input, procedural, and output legitimacy (Boström 2006; Tamm Hallström and Boström 2010; Tamm Halström 2004; Werle and Iversen 2006) and to enhance the effectiveness of the standard, in particular when the affected parties are involved in the standardization process and agree on the standard (e.g. Egyedi 1996; Schmidt and Werle 1998; Stroyan and Brown 2012). This distinction in input, procedural, and output legitimacy (Barnard 2001; Bekkers, Dijkstra, and Fenger 2007; Scharpf 1997; 1999) stems from systems theory (Easton 1965). Easton uses *input legitimacy* as consistent with citizens' demands and support. Applied to standardization, *input legitimacy* refers to the reputation that the standard is developed by the appropriate actors. *Procedural legitimacy* refers to the reputation that the standard is developed through an appropriate process, and *output legitimacy* refers to a positive reputation of a standard's salience and quality. Easton uses *throughput* instead of *procedural*. This term is better because *normative legitimacy* should be distinguished from *empirical legitimacy* (Kusnezowa and Vang 2021), and the term *procedural* suggests a limitation to the normative side of throughput. In their paper, Volpato and Eliantonio (2024) use *throughput legitimacy* and focus on the inclusiveness and openness of the standard-setting process. *Throughput legitimacy* depends on the quality of interactions of engaged actors, leading to efficacy, accountability, transparency, openness, and inclusiveness (Schmidt 2013). *Normative legitimacy* refers to whether an '*authority possesses legitimacy'* and whether its claim of legitimacy is valid, typically justified through, e.g. democratic elections. Quack (2010, 20) defines *empirical legitimacy* as '*people's perceptions of the rightfulness and appropriateness of authority for the acceptance and support for political and social order.'* The distinction is needed because Standards Developing Organizations (SDOs) deviate from national authorities, so democratic processes cannot be applied in the same way (Kusnezowa and Vang 2021). The definitions of *empirical legitimacy* imply that SDOs can gain legitimacy by the perceived acceptance by a specific audience.

Easton (1965) also mentions feedback systems. This is relevant to standardization because several feedback mechanisms apply before, during, and after standards development. These include feedback on drafts and standards' revisions based on market developments and experiences with the current version (Egyedi and Blind 2008).

Peters, Koechlin, and Fenner Zinkernagel (2009) distinguish between societal, normative, and legalist legitimacy. *Societal legitimacy* refers to the acceptance by the persons

concerned, *normative legitimacy* is based on ethical or moral judgments, and *legalist legitimacy* stems from the origin being a formally correct source or adopted in conformity with the correct procedures. The latter includes reference to universal principles or legislation. Different forms of legitimacy may conflict or strengthen each other. Therefore, a standard is not only legitimate or illegitimate, but it may be more or less legitimate (Peters, Förster, and Koechlin 2009, 512). Moreover, stakeholders' demands for legitimacy may change over time, and as a result, the standard setter's construction of legitimacy may also change (Black 2008). Normative legitimacy may relate to values. For example, in the context of EU policies, Cerutti and Lucarelli (2008) relates output legitimacy to the extent to which EU policies resonate with citizens' values and identities. Schmidt's (2013) definition of legitimacy relates to values as well:

> the extent to which input politics, throughput processes and output policies are acceptable to and accepted by the citizenry, such that citizens believe that these are morally authoritative and they therefore voluntarily comply with government acts even when these go against their own interests and desires. (Schmidt 2013, 9–10)

Values can be defined as 'individual and collective trans-situational conceptions of desirable behaviours, objectives, and ideals that serve to guide or evaluate practice' (Askeland et al. 2020, 3).

To conclude, there are multiple ways in which the concept of legitimacy can be connected to standards and standardization. These different ways may provide lenses to study the EU's concerns about ETSI's legitimacy. Most researchers relate legitimacy to stakeholder involvement. However, recent research by El Osrouti (2024) questions this emphasis: based on four longitudinal case studies he concludes that diversity in represented stakeholders has hardly any impact. Instead, the installed base, certification practice and core stakeholder intervention play a major role. Replication studies should confirm that remarkable finding.

## 4. Discussion

In this chapter, we first discuss the mismatch between the EU's concerns about ETSI and the solutions it proposes: the concerns are about standards but the solutions are about the process of their development. This mismatch is discussed in Section 4.1. The key findings focus on the selection of standards. Therefore, sections 4.2 and 4.3 review current initiatives for selecting standards and suggest criteria for standards selection. Section 4.4 continues by discussing the implementation of such criteria. Implications for ETSI are discussed in Section 4.5. However, ETSI is not the only organization setting standards for telecommunications – Section 4.6 extends the discussion to other telecommunication standards. Section 4.7 provides a reflection on the literature used. The chapter ends with some final remarks in Section 4.8.

### 4.1. *Mismatch between the EU's concerns and the solutions they ask for*

The EC is primarily concerned about foreign (mainly Chinese) influence. This is more than just a market share in a competitive business environment, the EU is concerned that Chinese technology may shape European ICT systems. Some technologies may make critical infrastructure vulnerable to cyber-attacks or allow China to observe European communications. The concerns are about output legitimacy, but interestingly, the

EC (2022a) blames ETSI for deficiencies in input and throughput legitimacy. Of course, these cannot be separated: output traces back to input and throughput. According to the EC, ETSI's legitimacy must increase by reducing the variety in stakeholder participation – this contradicts the literature that states that more variety in the set of stakeholders enhances legitimacy. Apparently, it is also about the stakes these stakeholders have, and the EU's appreciation of these stakes.

ETSI differs from CEN and CENELEC in that most standards serve the purpose of compatibility. Specifically, ETSI's standards provide technical solutions, whereas most CEN and CENELEC standards provide performance requirements and test methods that do not prescribe any technology and are independent of specific suppliers. In other words, ETSI standards can favor a certain technology and the suppliers associated with this technology. Standards-essential patents (SEPs) may apply (Abdelkafi et al. 2021, Chapter 7) to the technical solutions described in ETSI standards and these patents may be in the hands of organizations outside the EU, and often are. So even if a company like Huawei were excluded from European tendering processes, their technologies could still be included in European ICT infrastructure via SEPs.

Input and throughput legitimacy relate to ETSI's decision-making processes, i.e. who participates and how the process evolves. Companies outside the EU have similar voting rights and constitute the majority in several ETSI committees. They are allowed to participate, and their involvement reflects a shift in the relevant production industry; the market share of European companies in this field is declining. Excluding non-European firms from participation would make ETSI irrelevant, as other SDOs would take over its activities. In this special issue, Stephen Temple provides convincing arguments to substantiate this, and similar arguments can be found in Baron and Larouche (2023).

The EU would like ETSI to become more European. Apart from the shrinking share of Europe in the global telecommunications industry, this is also problematic due to the characteristics of the telecommunication market. Due to network effects (Katz and Shapiro 1985), it would not be practical to have a European standard next to other standards in other regions, it is better to strive for one common standard for global use. A geographic limitation is also problematic from a more fundamental perspective (De Vries 1998): what is European? Does it correspond to geographic spread of the parties allowed to be involved? If so, standards can then also be *used* by actors in other geographic areas. Conversely, European actors will not always use European standards. Moreover, the geographic spread of interested actors may change over time, and multinational companies may have subsidiaries in several countries, allowing US or Asian multinationals to participate via their offices in Europe. They could then also influence ETSI standards linked to European legislation for which approval country-level voting applies: they could influence voting via the national standards bodies in one or more EU member states. All these situations apply in the ETSI case, as exemplified by Baron and Larouche (2023). A standard can also be considered European because it is implemented in the national standards collections of the EU and EFTA member states. This applies to all CEN and CENELEC standards and to a subset of ETSI standards. However, these national implementations do not oblige anyone to use the standard unless they are legally enforced.

To conclude, the EU's concerns are about the use of the standards, whereas the solutions are expected to be in terms of participation. We will now consider whether there are any other means to mitigate the risks related to using standards in European ICT systems.

### 4.2. *Initiatives for selecting standards*

ETSI develops standards, but according to the EC there are risks involved in the use of these standards. By distinguishing between standards making and standards taking, we may find alternative ways to address the EC's concerns. The EC assumes that available standards are also used. This is not always the case. Available standards may be ignored in the market or lose the competition with another standard. Most of ETSI's standards are developed for use in ICT infrastructure, both in and often also outside Europe. The decision about their use is made by producers who use the standard in the products they offer or by telecom operators who decide on network specifications. After the liberalization of the telecommunications market, these became private parties. However, governments may also have a say because telecommunication infrastructure is considered a public good as it interconnects citizens and organizations. Governments can prescribe certain standards, but in general, they are reluctant to do so. Some countries have a governmental agency that provides a list of standards to be used in governmental ICT systems.[5] For example, the Netherlands has introduced a 'comply or explain' procedure: governmental ICT systems should meet the standards unless there are compelling reasons to deviate from using them. The EU's Directorate-General for Communications Networks, Content, and Technology (also called Connect) has initiated a project to facilitate and promote the use of open standards for an initiative on Open Standards for ICT procurement. They target procurement officials, policymakers, strategists, and architects in public organizations that want to reduce their ICT procurement costs by employing open procurement standards.[6]

These initiatives at both the national and at the European level may add legitimacy to (the acceptance of) certain standards more than just legitimacy-by-market-demand, in two ways: a governmental agency takes the lead and has a decision-making process in place to select recommended standards. Its use is formally limited to public procurement (i.e. to public ICT systems), but the influence of such a list may reach beyond those systems. If these initiatives receive more follow-up, a proper process could be established for putting standards on the 'recommended standards list' (*throughput legitimacy*). This would give *normative legitimacy* to existing standards. The government would not be solely responsible for the decision-making; other stakeholders should be involved to further strengthen the legitimacy of the process. In this decision-making process, *empirical legitimacy* should also play a role: the installed base of users is an important factor in achieving market dominance (Van de Kaa et al. 2011). Thus, in terms of Peters, Förster, and Koechlin (2009), this would add *legalist legitimacy* to *societal legitimacy*. Their third category, *normative legitimacy* is also relevant: decisions should not be based solely on majority voting or consensus (De Vries, Winter, and Willemse 2017). The normative aspect may refer to European values – the primary concern of the EC. These values must then be operationalized into criteria for standards acceptance.

### 4.3. *Criteria for selecting standards*

Interestingly, such value-based criteria do exist for standards development. These are the principles formulated by the World Trade Organization: transparency, openness, impartiality and consensus, effectiveness and relevance, coherence, and absence of constraints for developing countries.[7] Although these principles refer to the standardization process, some (i.e. relevance and coherence) apply more to standards than to the processes. All formal standards bodies, including ETSI, claim they adhere to these principles. Wiarda

et al. (2022) distinguish five elements of a responsible standardization process: inclusion, anticipation, the social desirability of standards, reflexivity, and responsiveness. However, the authors focus more on the process of standardization than on standards.

We focus on the acceptability of standards, so on standards taking rather than on standards making, and consider the criteria used by the above-mentioned governmental agencies that prefer certain standards to be used in governmental ICT systems. For example, the British government adheres to the following principles for open standards[8] (HM Government 2012, 7):

1. *We place the needs of our users at the heart of our standards choices;*
2. *Our selected open standards will enable suppliers to compete on a level playing field;*
3. *Our standards choices support flexibility and change;*
4. *We adopt open standards that support sustainable cost;*
5. *Our decisions on standards selection are well informed;*
6. *We select open standards using fair and transparent processes;*
7. *We are fair and transparent in the specification and implementation of open standards.*

These criteria are specific to standards, from a (governmental) user perspective. In the context of the fear of unwanted Chinese (or for instance American, Iranian or Russian) behavior, we try to connect these principles to the values underlying the European Union (2012, 17:)

> The Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. These values are common to the [EU] Member States in a society in which pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men prevail.

At first glance, the British principles and EU values seem to have little overlap. A simple solution might be to add an eighth criterion: our standards should respect European values as specified in EU treaties. However, these criteria need to be further defined and operationalized to allow measurement of constructs (De Ridder 2023; Douglas 2009) by making them specific for the ICT field: The criteria should specify what standards should ensure, such as respect, privacy, information security and protection against cyber-attacks. Such ICT-field-specific criteria should not be set in stone because new developments such as artificial intelligence and the introduction of quantum computers bring new opportunities but also new threats.

### 4.4. *Implementing criteria for selecting standards*

How would these criteria be implemented? On the standards acceptance side, the EU may want to align national governmental initiatives, broaden the scope of critical ICT infrastructure, introduce more value-driven criteria for open standards, and involve non-governmental stakeholders. This could become a new activity for Joinup[9], the European Commission's 'one-stop shop for interoperable, open, and free digital government ICT solutions, and an online space for e-Government professionals and enthusiasts to share and learn about digital public services and initiatives,' or it may be done by a new entity closely connected to Joinup. It should not be done by ETSI because that resembles

marking one's own homework. For applications other than the public telecommunications infrastructure, ETSI standards can compete for acceptance with other standards. The EC may allow fair competition, also between standards setters. This also would require independent assessment.

The telecom market, originally in the hands of national PTTs, was liberalized, but is currently facing the forces of American tech companies, Chinese companies close to the Chinese government, and Russian cyberattacks. According to the NIS Cooperation Group (2024) the danger can come from: (1) State actors or state-backed actors from a hostile third country, (2) Organized crime groups, (3) Hacktivist groups (these may have a political agenda, and may have less sophisticated capabilities; their goal is to either perform public attacks that help them raise awareness on a particular cause, or to cause damage to organizations they are opposed to), and (4) Insiders, within an otherwise trusted organization: an insider may work for an organized crime group, a hacktivist group or a state actor, or have other individual motivations. In standards setting the categories 1 and 4 may participate. Recent cases of attacks inside and outside Europe suggest that indeed the ICT infrastructure is vulnerable. A return to the old PTT situation is not feasible, and therefore better rules for this market are needed. Having standards as such is not sufficient, they should be embedded in a legal framework, preferably following the New Approach. This legal framework then would apply to all ICT and telecommunications systems, not only governmental ones. Currently, the New Approach is mainly about safety, but in this case, it would be about assuring interoperability while adhering to European values for telecommunication and ICT systems. For this purpose, the essential requirements can be embedded in a legal framework (i.e. ICT and telecommunication infrastructure should be interoperable and meet European values) while technical details, test methods, and operationalization of European values for their use in telecommunications should be laid down in standards. However, proper conformity assessment needs to be in place as well, with a balanced mix of self-declarations of conformity, certification (in a fully private context or as notified bodies), governmental inspection, or a combination thereof, which need to be coordinated at EU level. This conformity assessment would create an additional form of legitimacy: *compliance legitimacy* (Scharpf 2009).

### 4.5. *Implications for ETSI*

Based on this proposal, hardly any changes are needed for ETSI. By having extra requirements for the standards to be used in Europe rather than for the process of standardization, ETSI can continue to involve stakeholders from outside the EU for the majority of its standards, and thus maintain its global relevance. Voting rules would not have to be changed. However, acceptance of ETSI standards in Europe would no longer be self-evident. They may have to compete with other standards. Criteria in such a potential standards battle would not just be pragmatic or business-driven but would include the dimension of European values. This is ensured by the EU's involvement and the legal framework. Of course, ETSI committees can consider these criteria when developing their standards to enhance the chances that their standards will be selected at the end of the day. They may learn from value-added design approaches (Friedman and Hendry 2019).

### 4.6. *Extension to all telecommunications standards and specifications*

While the EU has expressed concerns about standards related to European legislation, it may seem as it does not care about other telecommunications standards. Yet, cyberattacks

and espionage are not limited to public telecommunication systems. Industrial systems and social media are examples of systems suffering from attacks and manipulation, and tech companies abuse user data for commercial purposes. This undermines society and is at the cost of European values. Telecommunication is too essential to be in the hands of criminals, foreign states, and just-for-profit companies. It would be best to apply the proposals described in this paper to all telecommunication standards that shape telecommunication systems in Europe. This would mean including the specifications of the systems operated by tech companies and platform companies. New legislation should forbid them from offering services in the European market if the criteria are not met. For example, this would imply that platform companies

> should enforce platform owners to open specifications to competitors on fair, reasonable, and non-discriminatory (FRAND) licensing conditions in order to enable society to benefit from network effects combined with the healthy effects of competition, using requirements while preventing the harmful impacts of monopolies. (Grillo and de Vries 2023, 1)

Of course, some systems are more critical to society than others. The difference between these should not result in differences in the criteria but in the conformity assessment. A self-declaration of conformity would be sufficient for systems with the lowest risk category. However, additional certification or even governmental inspection would be needed for critical systems. Here a benchmark would be in the European New Approach. Safety criteria apply to almost any product, but the conformity assessment differs per product category (EC 2022b).

### 4.7. *Implications for standardization literature*

Combining different sources of literature helps distinguishing between different forms of legitimacy, which is useful in analyzing the functioning of a standards body, and developing an alternative. While most studies focus on one or a few forms of legitimacy, this article shows the relevance of combining all of them. Moreover, most studies put emphasis on balanced stakeholder representation but the recent study by El Osrouti (2024) questions this; in his cases, it had hardly any impact on the standard and its use in the market. Additionally, if a balanced group of stakeholders were assumed to embrace certain (in our case European) values – will this indeed be the case? This applies to standards development, but also to a certain extent to our alternative: using (European) values in selecting standards. Would this indeed prevent Europe from accepting standards that introduce, via SEPs, technology from a non-European country? And would this be best for Europe? This depends on who participates, their knowledge, skills and interests. Anyhow, making the process and the arguments for the choices fully transparent will help to assess if indeed European values are adhered to. The latter makes it also easier to have a later audit on this aspect.

### 4.8. *Final remarks*

This proposal disentangles fair competition in the global ICT market from the issue of vulnerabilities of European ICT systems. ETSI can retain its international focus but may have to compete with other standards setters in the European market. Acceptance depends on conformity to criteria based on European values. These values may have an impact beyond Europe because the telecom market is global. However, foreign governments may disagree with this because they want to control their society via ICT systems. This

may lead to a variety of regional systems. Our proposal solves the issue of the inconsistency in European standardization strategy: values versus powerplay. It shows how Europe can be powerful by focusing on the 'soft power' of values, so it fully meets the demands of the EC, much better than the EC's own standardization strategy does. It reduces the vulnerabilities of European telecommunication systems so that European citizens and organizations can rely on these systems. By doing it this way, the EC would go back to the core reason for its existence: to avoid reasons for a new war but instead have peace by becoming dependent on each other in an economic sense. This includes having common standards. This is the peaceful alternative that may help mitigate tensions in the current global context. Meanwhile, it leaves all possibilities for Europe to fully decide on its own telecom infrastructure based on shared values.

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**Notes**

1. In the European 'New Approach', European Directives provide essential requirements, in most cases, about product safety. More detailed requirements for specific product groups and test methods are laid down in voluntary European standards. Meeting these 'harmonized' standards provides a presumption of conformity to the applicable essential requirements. However, companies are free to show that their products meet the essential requirements in another way than through these standards.
2. Policy Conversation on the EU strategy on standardization, organized by DeepIn (Research Network for Digital Ecosystem, Economic Policy and Innovation), 21 September 2022 in Brussels.
3. During this meeting, the number of 65 lobbyists was mentioned. When asked, Huawei confirmed the presence of lobbyists but disagreed about the number, mentioning that it was approximately a dozen. It should be noted that several other big companies have standardization lobbyists as well.
4. De Vries (1999) describes and analyses the role of these national standardization organizations. Since the timeframe when this data was gathered, hardly anything has changed, except for a cap on the length of the standards development process, and the use of ICT to support the processes.
5. See for an overview of initiatives https://joinup.ec.europa.eu/collection/eprocurement/best-practices-library.
6. https://joinup.ec.europa.eu/collection/eprocurement/open-standards-ict-procurement.
7. https://www.wto.org/english/tratop_e/tbt_e/principles_standards_tbt_e.htm.
8. *'open to the people and organisations that use our services and open to any provider, regardless of their size'* (HM Government 2012, 1).
9. https://joinup.ec.europa.eu/collection/joinup/about.

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