A peek into European standards making for AI: between geopolitical and economic interests

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Abstract

The new European regulation on artificial intelligence, also known as the AI Act, will require providers to assess their high-risk AI systems against certain requirements. To make this easier for them, a joint committee (JTC 21) of CEN and CENELEC, two European standards organisations, is preparing technical standards that will contain specifications on how to comply with the requirements of the AI Act. In this Chapter we present the results of fieldwork within CEN-CENELEC JTC 21, where we attended group meetings, collected qualitative data on participants and conducted qualitative semi-structured interviews with 16 standardisation experts. The study aims to understand the day-to-day work of standardisation experts, who they are and what drove them to standardisation, as well as the difficulties they encounter. Our findings reveal that experts from different stakeholders groups – public and private, big or small companies and so on – do not have the same experience with standardisation. However, they agree that the standardisation system is a complex machine, with processes that are difficult to comprehend, that there is a general lack of experts to work on AI standards, and that it is a highly diplomatic arena, with geopolitical and economic stakes. While many experts are highly critical of the way the current system works, their testimonies also point the way to potential improvements.

1 Introduction

Following the adoption of the European regulation on artificial intelligence, also known as the AI Act (European Parliament and Council, 2024), the European Commission mandated two private standardisation organisations, the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC), to draft technical standards which could be used to support the essential requirements of the AI Act. CEN and CENELEC therefore decided in 2021 to launch a Joint Technical Committee on AI: CEN-CENELEC JTC 21. Experts in AI from both the public and private sectors, were to contribute to the work of JTC 21, including technical reports and standards, and specifically, harmonised standards (hENs) requested by the Commission.

The structure and *modus operandi* of standardisation organisations have long been of interest to the academic world. A number of criticisms are often raised, in particular the long-standing debate on the involvement of the industry in standardisation (Mattli and Buthe, 2003; Brunsson and Jacobsson, 2002; Büthe and Mattli, 2011) and the subsequent risks of conflicts of interest

and policy capture (Mitnick, 2011; Whittaker, 2021). In Europe in particular, the standardisation system has been under scrutiny for some time. Indeed, under the New Legislative Framework (NLF) for product safety, hENs drawn up by European Standards Organisations (ESOs) have legal effects and a quasi-regulatory status. For AI in particular, the AI Act will fall under this product safety framework and will therefore follow the same pattern of having hENs to specify the obligations set out in the text. Policy scholars have expressed concerns about the content of these standards, as well as the tight schedule under which the standardisation organisations are working (Perarnaud, 2023; Pouget, 2023). Some notably highlight the challenge of using the technical tool of standards to address a wide range of non-technical issues, such as societal or fundamental rights issues (Almada and Petit, 2023; Tartaro, 2023; Gornet and Maxwell, 2024).

To the best of our knowledge, studies on standardisation are conducted from the outside, looking at the relevant literature to decipher the role of standards in the AI Act, their potential to solve AI-related issues or the risk of having technical standards to answer normative questions. Some reports list current standardisation initiatives, but they come from the Commission and not from independent academic research (Nativi and De Negris, 2021; Soler Garrido et al., 2023). The closest to our work might be the white paper on standardisation published by ZVKI (Baeva et al., 2023), a group of researchers from academia, think tanks and research institutes. In this white paper, the authors conducted an expert consultation to understand the role and pitfalls of standardisation for AI systems. However, this work is not intended to be a scientific study that maps out the space of AI standardisation, but rather a summary of current issues which aim to bring more attention to AI standardisation. For instance, not all the people interviewed are actively involved in standard making. Furthermore, the names of the people interviewed are not made anonymous, which runs the risk of distorting their discourse and not revealing all the truths standardisation can entail.

In this work, we aim to go deeper than these previous works and go directly ask the people who work on AI standards – the so-called "standardisation experts"[1], to tell us about their work. We seek to decipher the world of standardisation, in particular the purpose of the experts' work and the dynamics within the system, as well as the specific features, if any, of AI standardisation. We notably seek to answer three research questions (RQs):

- **RQ1**: What is the general organisation of standardisation work within CEN-CENELEC JTC 21?
- **RQ2**: Do AI standards differ from other standards and how?
- **RQ3**: Do all experts have the same experience of standardisation and what externalities shape their experience?

We first present our methodology in Section 3, based on fieldwork and interviews with 16 standardisation experts, supplemented by the analysis of quantitative data on participation within CEN-CENELEC JTC 21. Section 2 provides the necessary background to understand the stakes of this work. In particular, it highlights the need for standardisation in Europe, as standards are intended to support legislation, such as the AI Act. It further provides a map of the standardisation ecosystem, including the organisations and working groups involved. AI standards are still in the making and represent important issue for the proper implementation of the AI Act. The European standardisation groups therefore appear to be a political arena, at the heart of regulatory development, where tensions between stakeholders are at their highest. Section 4 presents the general

[1]In this work, we will refer to the people we interviewed and those who are involved in AI standard making as "standardisation experts", as this is the name generally used in this sphere, by SDOs and by the individuals working on standards themselves, to describe them (ISO, n.d.c).

organisation of standardisation work. It allows us to determine who is involved in standardisation work and why, as well as how they work.

In Section 5, we analyse the originality of AI standards, which lies both in the complexity and novelty of the technology and in the way it is approached by standardisation and the political world that oversees its efforts. In particular, we show the uniqueness of CEN-CENELEC's approach to creating a single horizontal standard for AI compliance. For the first time, AI standards will have to deal with ethics and fundamental rights, which attracts new stakeholders to standardisation. Given the high stakes involved, AI standards are being closely monitored by the European institutions.

In Section 6, we analyse the plurality of discourses that coexist within standardisation, highlighting the common experience of standardisation experts, as well as their differences. We invite them to tell us about the difficulties they encounter in developing standards and their frustrations with the way the current standards system works. In particular, many of them mention the complexity of the standards development process, the current shortage of experts, the influence of non-European actors and the over-representation of industrial stakeholders. However, their discourse is shaped by the institution they represent, their background and their previous experience of standardisation. Some of their criticisms point to ways in which the current system can be improved or restructured. However, the changes seem difficult to achieve and not everyone agrees with them.

Finally, in Section 7, we reflect on the reasons for the gap between the high stakes of standardisation and the low level of public interest in this issue.

As this work provides a few keys to understanding standardisation work, it can first be used as an educational document aimed at the general public. It can serve to inform them about the world of standardisation, to shed light on these important discussions which often take place behind closed doors, and to raise awareness on both the need for standardisation and the shortcomings of the current system. Additionally, we believe that this work can help those wishing to become involved in standardisation to get started and to become aware of the difficulties they may face. Finally, it can also help current experts to reflect on the difficulties of standardisation work and to open their eyes to the problems encountered by some of their colleagues.

2 Background

2.1 Why are standards important?

Standards are documents containing technical requirements or guidance, addressed to professionals, which codifies industrial expertise and compliance with which is voluntary[2]. According to this definition, standards can be developed by anyone, but certain standards have a special status in the EU. In particular, the EU distinguishes between mere "technical specifications" and standards drawn up by "recognised organisations", called Standards Developing Organisations (SDOs). There are six SDOs, and three which are located in Europe and are therefore called European Standardisation Organisations (ESOs). The three international SDOs are ISO, IEC and ITU[3], and the three ESOs are CEN, CENELEC and ETSI[4]. These SDOs are private bodies which work on standardisation topics as they see fit.

Standards also play an important role in Europe as part of the New Legislative Framework (NLF) for product safety. Products covered by European directives and regulations under the NLF

[2]This is our own definition of the term "standard". It is adapted from Frattone (2022).

[3]Respectively, the International Organization for Standardization, the International Electrotechnical Commission and the International Telecommunication Union.

[4]Respectively, the European Committee for Standardisation, the European Committee for Electrotechnical Standardisation, and the European Telecommunications Standards Institute.

must comply with a number of requirements defined in the legal text, but these legal requirements are supplemented by technical requirements defined in standards. Indeed, under the NLF, the European Commission can send a Standardisation Request (SR) to one or several ESOs, to ask them to work on specific topics for standards which will support European legislation, standards known as "harmonised standards" (hENs). The ESOs can choose to accept or reject the proposal, but if they accept it, they must present their work on these topics to the Commission within a deadline set in the request. In addition, the Commission has a supervisory role in the development of these standards as it is the final approver of hENs and can choose to reject the work of ESOs if it does not meet the requirements of the request or of the harmonised legislation it aims to cover (art. 10.6 Reg. 1025/2012[5]). The European Commission is therefore responsible for political choices while the ESOs are responsible for technical choices.

Furthermore, the Commission may choose to publish a reference to the hENs in the Official Journal of the European Union (OJEU), giving them special legislative powers, such as the power to grant a presumption of conformity with the corresponding harmonised legislation for stakeholders who comply with these standards. However, hENs are not necessarily developed by the ESOs themselves, since ESOs may choose to adopt international standards and submit them to the Commission for harmonisation. The standards developed by the SDOs therefore play an important role, as they can become hENs which are the main means of complying with European legislation. Moreover, even when they are not harmonised, standards have a strong influence on the technologies that can be adopted in the long term, which also gives them an economic role.

2.2 The ecosystem of AI standardisation

As part of the regulation of artificial intelligence, the European institutions have reached agreement on a legislative text which has just been published in the OJEU: the AI Act (European Parliament and Council, 2024). The AI Act is part of the NLF, which means that for certain products covered by the AI Act, the text will define requirements that will be supplemented by technical requirements in hENs. This is notably the case for systems considered to be "high risk". These high-risk AI systems include products already covered by harmonised legislation, such as medical devices or machinery, as well as new applications such as biometric AI systems or systems intended to be used by law enforcement, border control or the justice system. In order to provide high-risk AI systems with a means of complying with the requirements of the AI Act, the European Commission has submitted a standardisation request to CEN and CENELEC. The public version of this request was made public in the form of a Commission implementing decision in May 2023 (European Commission, 2023a). In the request, the Commission lists ten items that should be addressed by one or several hENs, corresponding directly to the requirements of the AI Act for high-risk AI systems. It is not yet known whether another version of the request, or even a completely new request, will be issued to cover more topics. Topics that are not currently in the request, but could be in the future, include requirements for General Purpose AI (GPAI) systems, systems based on AI models trained on large amounts of data and which can be used in a variety of downstream tasks.

All six of the SDOs are currently working on developing AI standards, but the most important initiatives are being led by a Joint Working Group (JTC) between CEN and CENELEC – the CEN-CENELEC JTC 21 – and a Sub-Committee (SC) in a JTC shared by ISO and IEC – the ISO-IEC JTC 1/ SC 42. Indeed, JTC 21 is directly drafting standards to answer the request from the Commission, as well as other topics at their own discretion. But JTC 21 could also adopt ISO/IEC standards which are more advanced, either just to consider them as European standards,

[5]Regulation (EU) 1025/2012 (European Parliament and Council, 2012) on standardisation sets out the rules for the European standardisation system.

but also eventually to present for harmonisation. Indeed, mutual adoption of standards is made possible thanks to the Vienna agreements between CEN and ISO, which also account for possible parallel development of standards between both organisations. However, ISO always has priority over CEN to develop standards, if there are no specific reasons to leave the development to CEN[6].

They are several working groups (WG) tasked with different projects, both at ISO/IEC JTC 1/ SC 42 and at CEN-CENELEC JTC 21. Some of these working groups are developing one or several standards on AI, such as WG 4, which is developing the future "AI Trustworthiness framework", a standard which should be presented for harmonisation, in response to the Commission's request[7]. To take part in the discussions of these working groups, an expert must first register in a National Standardisation Body (NSB), such as AFNOR in France. Like SDOs, NSBs are private entities and represent their country in standardisation discussions at European or international level. To join, experts must usually pay for annual membership fees, paid by their home institution. However, academics and small business experts are exempt from these fees. In addition, some experts from "partner" organisations can participate in CEN-CENELEC JTC 21 without registering with a NSB. However, they cannot participate at international level[8].

Standardisation work is voluntary, which means that experts are not paid by the NSB or SDOs to work on standards. When they register, they agree to write standards anonymously, thereby conferring intellectual property of their work on the NSB. These NSBs then publish European and international standards and sell them to interested stakeholders.

3 Methodology

3.1 Data collection: participation to CEN-CENELEC

For this study, we registered with the French National Standards Body (NSB), the Agence Française de Normalisation (AFNOR), and asked to participate to standardisation initiatives at European level, particularly in the working group (WG) 4 on "Foundational and societal aspects".

As members of JTC 21 WG 4, we had access to the list of members who registered to follow the activities of this working group. They do not necessarily participate actively in JTC 21 discussions, but they are at least monitoring activities. For each of the individual who joins WG 4, CEN-CENELEC collects their name, e-mail contact and the National Standardisation Body (NSB) they are registered in. We used this information to build our own database, looking for information on the internet about the person's current professional status. Our database therefore contains the following information, for each member:

- "Id number": integer from 1 to 218, representing the expert from WG 4. We have not retained any names or contacts from the CEN-CENELEC database; everything is anonymised.
- "NSB": the name of the country in which the expert is registered.
- "Affiliation large": the type of affiliation between "Industry", "Consulting", "Organisation", "Research", "Government", "Standards".
- "Affiliation precise": a refined version of the affiliation types[9].

[6]For more information, see Section 6.3.

[7]For more information on the AI trustworthiness framework, see Section 5.3.

[8]This poses issues when international standards are considered for adoption by European entities.

[9]For "Industry" and "Consulting", the refined categories are "Freelance", "SME", "Corporation" and "BigTech", representing the size of the company, with "Corporation" being trans-national companies outside of BigTech companies. "Organisation", are separated between "Professionals", "Thinktank" and "Consumers", with the latter en-

- "Affiliation origin": the country of origin of the main affiliation.

The labels were chosen by the authors in order to map the various sets of interests. All the data was subsequently annotated by hand by the authors. It should be noted that CEN-CENELEC also uses its own classification of stakeholders, but many data instances were missing and the categories were too broad to allow precise analysis. For example, all types of industry were grouped together. However, in our opinion, a large IT company ("BigTech"), a multi-national company applying AI in its sector ("Corporation"), an SME developing small AI systems and a consulting firm selling its expertise and services, may have different interests in AI standardisation and therefore deserve their own categories. The many categories we have created show the diversity of AI standardisation experts.

The data we collected shows that 218 people are registered at WG 4 alone. All of these people do not necessarily take an active part in standard drafting[10]. Consequently, analysis of this data does not directly show who contributes to standards. Rather, it shows who are the interested parties who follow the discussions on standardisation.

3.2 Fieldwork and experts interviews

For this study, we further interviewed 16 people from CEN-CENELEC JTC 21[11]. At the same time, we registered with the French National Standards Body (NSB), the Agence Française de Normalisation (AFNOR), and took part in standardisation discussions at CEN-CENELEC JTC 21, particularly in the working group (WG) 4 on "Foundational and societal aspects"[12]. There, we attended meetings to understand the dynamics underway within the organisation[13]. WG 4 is the group in charge of developing the "AI Trustworthiness framework", the main standard that will be used for compliance to the AI Act[14]. It is therefore the place where the stakes are highest, where many stakeholders seek to get involved, and where tensions between actors with competing interests are more likely to emerge.

For the interviews, we selected a sample of standardisation experts representative of the different types of profile that can be found in the field of standardisation, which we identified thanks to the analysis of the data collected from CEN-CENELEC[15]. We notably spoke to academic researchers, consumer representatives, people working in research institutes, private organisations, Small and Medium-sized Enterprises (SMEs), BigTech companies[16] and public authorities. The distribution of interviewees by stakeholder group is shown in Appendix B. Where interviews were conducted in

compassing all partner organisations. "Research" is separated between "Academia" and "Institute", with the latter representing private research entities. "Standards" represent standardisation organisations, both at national level with "NSB" and European level with "ESO". "Other" represent standardisation organisation that are not part of the official NSBs but are strongly related. Finally, "Government" is separated between "National", "European" and "International" organisations.

[10] See Section 6.2.

[11] Interviews took place between April and October 2024.

[12] The data we collected also comes from WG 4, but the experts we interviewed came from the whole of CEN-CENELEC JTC 21.

[13] We have been part of AFNOR since January 2023. We started by attending AFNOR meetings, then we realised that most of the work was taking place within JTC 21 and we started attending WG 4 meetings in June 2023.

[14] See Section 5.3.

[15] See previous Section.

[16] BigTech companies are the largest IT companies in the world. They include American companies such as the GAFAM – Google, Amazon, Facebook (Meta), Apple and Microsoft – as well as IBM, Nvidia or Tesla, for instance. They also include Chinese companies such as the BATX – Baidu, Alibaba, Tencent, and Xiaomi – as well as Huawei, DiDi, or DJI.

another language and experts are quoted in this work, the translation was done by the authors and is indicated by an asterisk (*).

The interviews we conducted were semi-structured, with various themes to be explored. Our grid of themes can be found in Appendix A. Each theme was addressed in all the interviews, but the questions asked depended on how the interview unfolded. The coverage of certain themes and questions evolved as we interviewed experts, in order to obtain more precise answers and deepen our understanding of certain subjects. The interviews were conducted jointly by the two authors[17], combining legal and sociological expertise. Interviews lasted between thirty minutes and three hours and were recorded with the consent of the interviewee. Only one interviewee did not consent to being fully recorded and asked for the recording to be interrupted during the interview. The recordings were translated from speech to text by the authors, with the help of a local instance of a machine learning model for speech recognition. They were then coded into themes that evolved as the interviews with the experts progressed. The following coded themes correspond to different sections of this work.

3.3 Data collection: interviewed experts

Experts were assigned an identification number from P1 to P16 to ensure anonymity. For each expert, we noted their main affiliation type similarly to the data collected through CEN-CENELEC[18] In addition, we labelled each experts according to their background: "computer science" – for experts in computer science and AI; "governance" – for experts in standardisation processes; or 'humanities' – for experts in other disciplines, such as social science, philosophy or law, or for representatives of interest groups such as consumer groups or trade unions.

We chose these categories because we found during the interviews that the experts themselves tended to distinguish between "AI experts", who have expertise in the object of standardisation, and "experts in standardisation", who have experience in the standardisation process and know better than AI experts how to develop a standard. We added a third category because we found it difficult to classify our experts into these two groups alone. This last category of experts seems to be quite unique to AI standardisation[19]. This third category allows us to bring together experts who are not generally found – or not very often – in other standardisation circles.

Consequently, we created two databases: one for CENCENELEC participation, described in Section 3.1, and one specific to the experts we interviewed, with an additional label on the area of expertise, which was too difficult to infer for the participants we did not interview. The data collected for participation in CEN-CENELEC and for interviewed experts is analysed in particular in Section 4.1. The rest of the sections are mainly based on the experts interviews. We have chosen not to disclose the CEN-CENELEC database, but the database specific to the experts we interviewed, with the distribution of their backgrounds and affiliations can be found in Appendix B.

4 General organisation of standardisation work

To begin with, we seek to understand the organisation of standardisation work within CEN-CENELEC JTC 21: who are the experts, what drove them to standardisation and how do they work.

[17] With the exception of two interviews which had to be conducted by a single author due to scheduling constraints.
[18] See Section 3.1.
[19] For more information, see Section 5.2.

4.1 Meet the experts!

To understand the dynamics at work within standardisation, we first need to look at who is working in this field.

A variety of paths to standardisation

Among the experts we interviewed, we noted that there are no two identical ways of getting into standardisation. Some experts are asked directly by their companies to work on standards [P3, P7], others are interested in the ethical issues of AI and come across standardisation [P2, P4, P10], others discovered standardisation with the AI Act [P5], and so on. It almost feels like some of them arrived here by chance, that they were assigned this task of monitoring or participating to standardisation work by their organisation, but were not specifically trained for this and had to discover this world for themselves.

Many experts have also entered this world thanks to someone on the inside who suggested that standardisation work might be of interest to them [P2, P3, P7, P9]. Indeed, it is not uncommon for JTC 21 members to recruit new members, and experts admit that they often try to bring in people with whom they have common interests. *"I had to bring fifteen [people] or so into CEN-CENELEC. And I am quite satisfied"**, says [P2]. This is an excellent way of increasing one's number of allies by specifically selecting people who have a similar vision and position to them. *"There are very few of us. So, everyone who seems to be interested, of course we want to bring them in. This will give us more weight when it comes to taking a stand and negotiating"**, says [P9]. In standardisation, everything stems from your network.

A highly interdisciplinary world

Standardisation experts have various backgrounds and experiences. Some experts are engineers, computer scientists, and got involved in standardisation because they were already technical experts the standardisation object – here, in AI. But just as many people appear to occupy governance and management positions and have acquired expertise directly in the field of standardisation. This type of experts are often involved in several standardisation projects at the same time, and not solely on AI. They are sufficiently competent in the various fields to understand what the computer science experts are saying. However, their role is not to take part in the technical discussions, but to provide support by helping with drafting processes and facilitate the development of standards. Yet, nothing provides them from giving advice on technical points too. This separation between "computer science" experts and experts specialised in standardisation itself, whom we called "governance" experts, is sometimes made by the experts themselves [P8].

But expertise can also vary according to the background of the experts. While a large proportion of experts in AI standardisation appear to be from computer science, some delegations, like the French one, are very varied and include a variety of profiles, such as ethicists, or legal scientists. AI standardisation is also particularly attractive to many civil society players who do not fall into this binary classification. We therefore added a third category, to represent these new stakeholders: the "humanities" experts. In the 16 experts we interviewed, we kept the balance between these three categories of stakeholders[20]. This is, however, not necessarily representative of all the experts who follow standardisation work. But we did not collect this information for our dataset of members, because we did not want to infer their expertise without discussing it with them.

Similarly, we did not collect the gender of all the members of WG4 because we did not have the means to deduce this information without talking to the individuals. However, it should be

[20] 6 experts in computer science, 5 in governance and 5 in humanities. This distribution is available in Appendix B

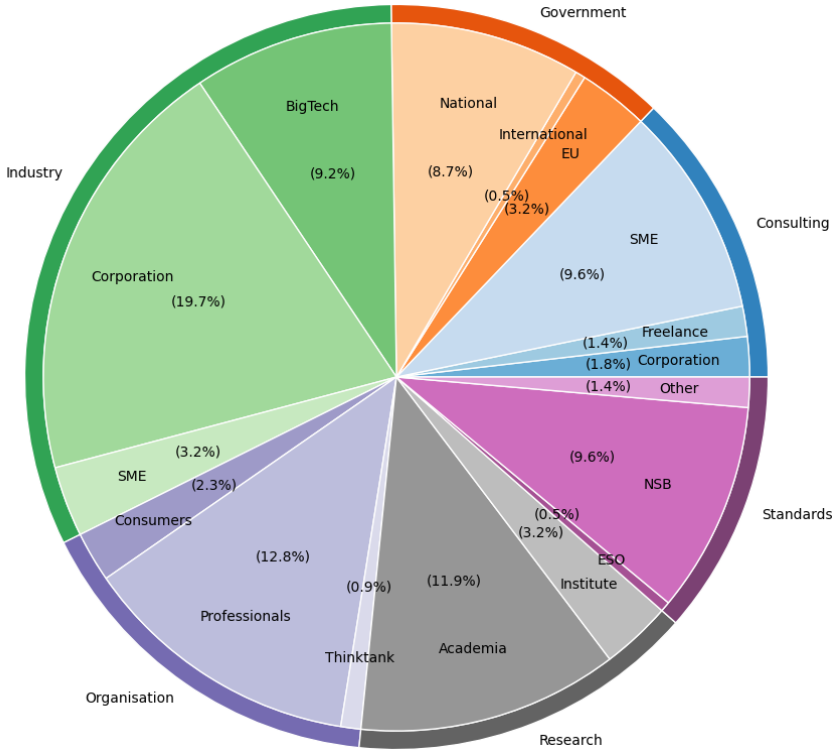

Figure 1: Pie chart of the main affiliation of CEN-CENELEC JTC 21 WG 4 members.

noted that several experts we interviewed explained that men are still over-represented compared to women in standardisation today [P2, P11]. In the experts we interviewed, three of them (18.75%) are women.

A large representation of stakeholders

The data on CEN-CENELEC members shows that behind the classic separation between public and private actors lies a wide variety of stakeholders. For example, in the private sector, the raison d'être of companies and organisations can be very diverse. Some companies develop AI systems, others are subcontractors, others implement AI in downstream tasks, and so on. In particular, we have chosen to separate traditional companies, which sell products, from consulting firms, which provide services and expertise. We have also separated transnational corporations from BigTech companies, because today, the GAFAM and BATX have far more power in the digital technology market than traditional companies. Private players also include private organisations such as professional and expert organisations, think tanks and a number of private research institutes. Organisations also include consumer and worker representatives from a handful of entities that have been selected by CEN-CENELEC to participate as partner organisations. Finally, members also include representatives of standardisation organisations, mainly the NSBs, but also people from ETSI who come to see how CEN-CENELEC's work is going, or other standards bodies that are not official NSBs. On the other hand, public actors include academics, national government bodies, the European Commission and a number of international organisations. The data is presented in Figure 1.

Firstly, we confirm a fact already widely known in the literature, namely that there is a large proportion of private stakeholders. If we consider that "public" actors are those labelled "Gov-

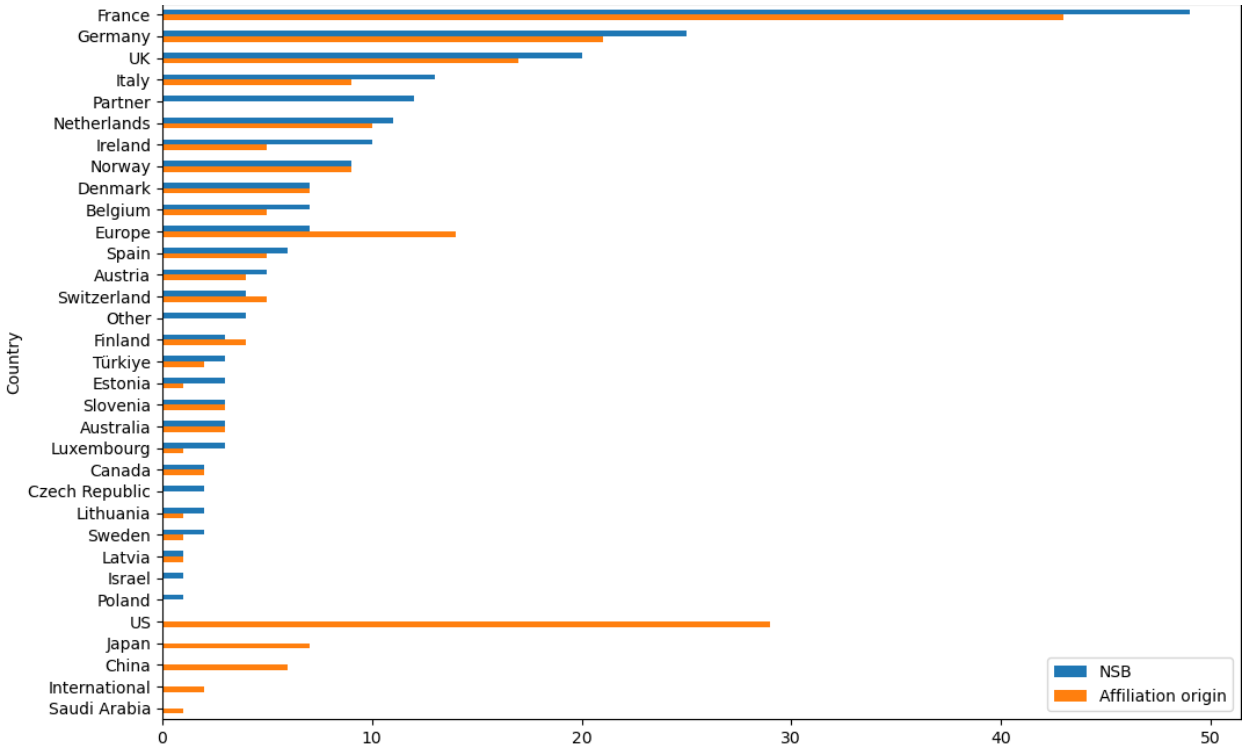

Figure 2: Bar chart of WG 4 experts' NSB country of origin and country of origin of their affiliation.

ernment" plus the academia, and that the rest are private entities, three out of four members are from the private sector. Company size is also important, with transnational companies, including BigTech and other corporations, accounting for almost a third of members.

It should be noted that we have displayed the main affiliation of the stakeholders, but many members have several affiliations. Some civil society representatives may also be part of a private organisation, work in a company or teach at university. Similarly, academics sometimes work for non-profits or are part of governmental bodies. Finally, some have changed position and are no longer affiliated to their former institution, but remain very close to its interests and concerns. It is therefore very difficult to have a complete representation of reality.

Some countries are more involved than others

In our dataset of WG4 members, we also looked at the country of origin of the experts and their home institution. Once again, it should be remembered that these figures only represent those who follow the discussions, and not necessarily those who actively participate in them. Yet, they do give an idea of the power dynamics between the countries involved. The data is presented in Figure 2.

First of all, there is a major imbalance in the number of experts per country. France is well represented, with 49 experts out of 218, followed by Germany, the UK and Italy with 25, 20 and 13 experts respectively. Behind Italy, partner organisations such as consumers and workers representatives, which are not affiliated to any NSB, have 12 members. We also note the presence of countries outside the European continent, such as Canada and Israel, which are authorised by CEN-CENELEC to participate but do not have voting rights. In addition, certain countries located in Europe, but not part of the European Union, have a full membership status, which means that they can participate and vote on standards in the same way as other members. The case of the

UK is perhaps the most interesting, as the British delegation is strongly represented and exerts a certain influence on European standardisation[21]. While for some of the experts we interviewed, this is normal, since they will be affected by the AI Act and its standards [P9], for others, it calls into question the EU's sovereignty over its own standardisation system [P5].

Furthermore, Figure 2 shows that the nationality of companies and organisations does not necessarily follow the same pattern as the experts' countries. Indeed, many trans-national groups with a subsidiary in the EU are authorised to participate, even if the company's head office is outside Europe. This is particularly true of American BigTech companies, as well as certain companies based in Japan and China.

4.2 The benefits of working in standardisation

Standardisation work does not attract many people as it is voluntary and time consuming. Yet, many experts have found ways to make this investment of time pay off.

Getting an edge

In Europe, harmonised standards are a sub-set of the law. Working on standards allows experts to have a direct say on the content of the frameworks that will ultimately underpin the law. Ultimately, it is a means of influencing the law itself. Even when standards are not harmonised, when they are developed by international organisations such as ISO, they are often very well received and adopted worldwide by companies. Thus, even outside of legal influence, stakeholders are seeking to seize the economic power of standards.

According to [P2]: *"It is a prospective role. [...] If you can put the right words in the right places, you can do good things"**. On the contrary, if you do not participate in standards development, you risk falling behind. In the words of [P11]: *"When it comes to standardisation, you're either on the menu or at the table. [...] If you do not take part in the work, the subject will be dealt with without you and you will suffer the consequences"**.

Additionally, working in standardisation gives experts practical knowledge about of what is on the horizon, whether in terms of regulation or scientific innovation. It enables industry stakeholders to stay one step ahead of new technologies and can help decipher geopolitical issues otherwise reserved for diplomats, as well as providing a better understanding of issues of sovereignty and competition [P11]. Standardisation also provide experts with a large network of stakeholders. It enables them to meet new people interested in similar areas of innovation, and then to build projects outside standardisation [P8]. This is particularly true of companies and research institutes, which can collaborate on industrial projects.

Proposing products that align with standards

Most of all, companies have strong business incentives to develop products that comply with current standards, so that they can be more easily implemented with their partners or customers [P9]. Some experts explain that they first became interested in a standard because they were planning to develop a product and wanted to see what the standard provided before starting development [P3]. Hence, because they have been involved in the creation of the standard, companies can develop a product that fully meets the expectations of the standard. Having a product that is already aligned with standards also gives companies a competitive edge on the market [P9]. It is a

[21] It should be noted that other countries enjoy this status at CEN-CENELEC without being part of the EU, such as Türkyie, Norway and Switzerland, as well as other countries not present in WG 4.

marketing argument, as buyers will prefer to buy a product which already complies with standards and regulations.

However, sometimes, participation in standardisation is not motivated by the development of a product based on the standard, but rather by the development of a standard based on a product. Even if standards never directly impose the use of a specific product, the requirements they contain can be oriented in such a way that the product under development meets the need formulated in the standard [P3]. Companies can then advertise their product as a solution that complies with the standard. [P9] tells us: *"It is self-serving. The day I want to do business in this country, I will benefit from a more favourable environment because I will speak my own language. '[This ML concept] is define in this document you're using. It's a good thing my product does exactly that.' So for me, this is indirect business development. It is in my interest to get as many states as possible to align with my vision of things, because that will help my business"*[*].

Creating network and selling expertise

Standardisation is a great space to grow one's network. Experts from different sectors explain that it is a way for their company or institution to be seen and build partnerships with other actors, outside of standardisation [P15]. Some experts are well established and well-known in the world of standardisation. They have begun to build their reputation and sell their company's expertise. They report that their reputation spreads by word of mouth within the standardisation ecosystem, enabling them to take part in more projects and win new customers [P9]. This is particularly true for previously unexplored subjects where these experts are the first to plant their flag and impose their vision, which has enabled them to be recognised today as the international experts in the field [P9]. It also enables experts from small businesses to gain an edge over large companies. [P9], who runs an SME, explains: *"Once we started to get to grips with the subject and people saw that we were the ones holding the reins, the balance of power changed between us and the big groups. [...] We say to companies: 'We are writing the standards that will regulate you. [...] If you want, we can now help you to comply with it"'*[*].

But even outside the standardisation ecosystem, experts sell their standardisation expertise, often as consultants [P2]. For [P8]: *"Understanding what a standard is and how it is made really helps. [...] Ultimately, it leaves a mark on my job, on my professional activity"*[*]. It is a way of reusing information [P2] and compensating for the time investment [P11]. There is a large number of consulting firms whose business model is based on advising on standards and supporting companies. The consultants explain to stakeholders outside the ecosystem what standardisation is and how to comply with the standards in force [P4]. This consultancy activity can be carried out in parallel with the involvement of an expert in standardisation activities, but it can also be a springboard for a career after standardisation [P11]. Some are even using this expertise to create a quality label for AI or a private certification scheme [P8]. These schemes are not intended to compete with standards developed by recognised SDOs, but to provide a quicker and simpler way of showing consumers that a company is concerned about producing quality products. However, not everyone is in favour of these quality labels, as some experts strongly criticise them and consider them to be scams [P9].

[P11] summarises the benefits of getting involved in standardisation work: *"You can expand your network, you can sell your product, you can get to know people, you can advertise on LinkedIn about the various projects you have set up, you can have a name as a contributor or editor on a standard. But on the other hand, it requires a considerable effort. So you have to weigh up the pros and cons carefully"*[*].

4.3 A multi-national system based on consensus

The SDOs are complex structures, each with its own *modus operandi*. However, the roles taken on by the experts and the types of meetings they attend are often similar from one organisation to another.

A structure based on national delegations

At CEN-CENELEC and ISO/IEC alike, the standardisation processes are centred around national delegations. Experts need to be registered in a national body to participate in standardisation work[22]. Once registered, they can ask the secretariat of their NSB to join European or international working groups, as experts see fit and according to their areas of interest.

The more technical discussions happen in working groups, with interested experts. Each working group is based on a general theme such as "cybersecurity" or "societal aspects". Working groups meetings usually happen online. In a working group, experts can make contributions, i.e. documents often representing their own work and which are intended to feed discussions and sparkle debates [P4, P6]. Each working group has a "convenor", a person responsible for coordinating discussions within the working group and designated among the experts. The role of the convenor is to provide the group with the space and resources it needs to have fruitful and effective discussions. When a draft standard is launched, each project is allocated to an "editor" – or several co-editors. The editor's end goal is to reach consensus on a standard and publish it. They coordinate the work of all the experts on this specific standard [P10], and are responsible for gathering and compiling comments and for directing the drafting process [P2]. One working group can thus host several draft standards.

Alongside the discussions in the working groups, the experts registered with a NSB also meet online, generally once a month [P10]. This NSB meeting serves as a means of coordination, to inform everyone of the discussions taking place in the various working groups in the different SDOs. This enables experts who are not part of all the working groups to keep up to date with the work of others. These meetings also enable experts from the same NSB to discuss the country's position for the forthcoming plenary meetings where all countries are represented. Coordination within the NSB enables all stakeholders to find common ground and present a united front. The meeting is also an opportunity to send comments on a given standard and to vote on the adoption of standards.

Some NSBs, such as the French one, also organise "task force" groups, outside of the official NSB meeting, to discuss relevant topics with interested experts. This facilitate the formation of a national position on the topic which can later be proposed by these task force experts at the NSB's meeting [P15].

Once every few months[23], experts meet in-person. These plenary sessions last for a few days[24] and are organised around heads of delegation, i.e. experts mandated by their NSB to represent their country's position [P8]. The head of delegation is usually accompanied by two or three other experts from the same NSB, although this varies according to the size of a country's NSB and its involvement in standardisation, as participation is always voluntary. The plenary session consists of an opening meeting and a closing meeting, between which working group meetings are held.

At the opening and closing meetings, discussions are animated by the Committee chair. The heads of delegation are the only experts entitled to speak directly, but they may give the floor to

[22]There are only a few exceptions, such as certain European organisations and non-profits, which are authorised to participate directly without going through a NSB.

[23]Usually three months for CEN-CENELEC JTC 21 and six months for ISO-IEC SC 42.

[24]Usually three days for JTC 21 and five for SC 42.

other members of their delegation to defend an argument [P9]. When decisions must be taken, they are reviewed at the plenary meetings, one by one. Everything is planned in advance: proposals for new projects are sent out a few days before the meeting, questions and comments are sent back and answers prepared. So the whole discussion is orchestrated [P8]. However, it often happens that debates emerge and the discussion moves away from what had been planned at the NSB meetings. In these moments, the heads of delegation have to improvise, while respecting their country's general position. [P9].

At the end of the session, the plenary body reviews and validates the actions that have been taken [P8]. For instance, to launch a standard, the subject is proposed by experts with the support of a country. The proposal is then presented at a plenary meeting by the head of delegation. There must be a consensus between all countries to launch the initiative [P9].

Consensus building

All the decisions taken within the SDOs are based on consensus. However, defining consensus is a complex issue. [P8] reckons that it is not like a vote with a clear rule. Various experts have given us different definitions which, taken together, begin to paint a picture of how consensus is understood in standardisation. [P2] defined it as a *"systemic acceptability"**, [P10] as a *"lack of a sustained opposition"**. For [P8], the idea is that not everyone will agree, but that those who do not agree will not veto. These descriptions enable us to identify two key elements of consensus within SDOs: a majority of people must agree and there must be no strong opposition. It should be noted that this definition is close to the general meaning of the word "consensus", which can mean, for example, *"general agreement"* or *"the judgment arrived at by most of those concerned"* (Merriam-Webster Dictionary, n.d.). A key element added by standardisation experts is the absence of strong opposition, something the experts verified experimentally.

However, it remains to be seen what the terms "majority" and "strong opposition" mean. [P4] explains that a "good" majority is usually considered to be around 2/3. This means that around 70% of countries have to agree for a project to go ahead [P10]. However, this threshold is highly theoretical. It depends very much on the decision and its context. Consensus at plenary meetings, for example, is different from consensus within working groups. As regard to the the term "strong opposition", [P10] explains that opposition alone is not enough, that it must also be supported by good reasons which must be communicated. For [P4], it depends on whether you have a good argument to put against the decision. This form of decision-making, based on consensus, means that there is no real decision-maker, although certain positions within the SDOs[25] have a role to play in facilitating consensus [P10].

Finding consensus in a highly diverse world

In standardisation, experts come from everywhere, do not necessarily speak the same language[26], have a variety of backgrounds, affiliations and fields of expertise. This diversity in expert profiles sometimes makes it difficult to understand each other. Yet they all have to agree to reach a consensus.

This diversity causes first a problem of linguistics and semantics [P2]. Experts from different backgrounds tend to talk about the same thing in different words or different things with the same word, which sometimes leads to misunderstandings. *"The problem is that everyone arrives with*

[25] Convenor, editor, head of delegation, chair, etc.

[26] Work within ESOs and international SDOs is carried out in English, but for most experts this is not their first language.

*their own terms, their own definitions, their own concepts, their own metrics"**, [P4] explains. This results in a huge amount of moderation on the part of convenors and editors, to try to understand and accommodate everyone [P2]. [P3] concedes that the end result is often a patchwork of concepts picked up here and there. Some experts admit that they enjoy these interdisciplinary discussions [P10], while some others find them tedious and tiring. *"It can be day-to-day debates about a semicolon or a term"**, [P11] sighs. Yet this work of defining concepts and terms is a central topic in standardisation. *"80% of the work consists of knowing what we are talking about. It is all about terminology. Words are important. Once you know what you are talking about, setting technical requirements is much easier"**, explains [P4]. Indeed, words are important because each stakeholders has an interest in using one or the other, to steer standards in a certain direction, for instance to encourage the use of a certain product or a certain form of regulation. One of the main objectives of consensus is therefore to align everyone's interests. For [P8], this is the mission of standardisation as a whole: to capture the interests of all stakeholders in society, to ensure that everyone is represented and to converge towards a common solution. In order to respect everyone's opinion, the experts are encouraged to follow a code of conduct provided by the standardisation organisation (CEN-CENELEC, 2018), whose main points are reminded to participants before each meeting [P11].

A game of alliances and diplomacy

Whether it is the industry or civil society and academia, every experts in standardisation is playing a strategic game of alliances to achieve their goals. Stakeholders must form coalitions with other countries or other groups, in order to increase their numbers and get their proposals through or block those of others [P4, P11]. *"We often say that everything is decided at the coffee break. In plenary meetings, all we do is confirm the positions that have already been defined"**, says [P9]. For [P16], there is always a lot of *"exchange of favours"*, which sometimes makes it difficult to understand why a certain stakeholder acts in a certain way or why a project fails.

These alliances are not always easy to make. As [P12] explains, experts need to find people who are not totally aligned with their positions in general, but with whom they can find common ground on specific points. [P4] notes that this type of strategy is the speciality of BigTech companies, which, according to them, have a common interest in the absence of standards or in empty standards[27].

But other groups of stakeholders also admit to using these strategies. Small companies or small countries can form alliances against other companies, so that when the latter tries to block a project, they have sufficient numbers to fight back [P9]. Civil society experts make alliances between organisations. But they can also join force with academic researchers and SMEs [P6, P13]. *"We collude sometimes, kind of like, 'what are we going to do? How are we going to do this?' And kind of share strategy. It is not a formal shared strategy because, you know, we want to maintain a kind of independence"*, recounts [P7].

However, it should be noted that these alliances are not fixed in time and can evolve rapidely. [P10] explains: *"Standardisation is a very dynamic environment and things can change very quickly. You might have the idea that there are kind of blocks, [...] but this is not always the case. Many times you can find people that are on different sides and they agree on something and disagree on something else. So the relationships are much more entangled"*. As there are many incentives to collaborate, [P15] notes that people have no problem mixing between the public and private sectors. Standardisation therefore appears as a highly political arena, where relationships are central and diplomacy necessary.

[27] See Section 6.4.

5 The originality of AI standards

On the surface, AI is not that different from any other product that can be standardised. Several of the experts we interviewed had prior experience in standardisation, either in IT and software in general, or in cybersecurity. Some experts initially claimed that there was no real difference between AI and these previous works [P11]. But in reality, by digging deeper, we found other differences between the way standardisation used to work and the way it works today for AI.

5.1 A complex and new object to standardised

AI is a complex technology whose science and regulation are not yet very mature

AI, unlike other software that experts have worked on before, is a probabilistic system. This means that its outcome is not easy to predict. [P15] noted that there are not just one or two parameters, AI is very complex and its field of application is ill-defined. This means that the same system can act completely differently in two situations, such as an autonomous car in sunny or rainy weather. This complexity and unpredictability makes it difficult to standardise these systems in a general case.

In addition, the regulation of AI has only just begun. [P12] explains that, compared with data protection, for which principles have existed since the 1970s, efforts to "structure" AI are fairly recent[28]. This recent development is giving rise to lively debate about who should set the limits and what those limits should be. For [P9], the difference lies in the instability of this regulation. They explain that the rights enshrined in the GDPR are fixed, whereas for AI they are still under construction [29].

Furthermore, while AI itself is not a recent field, dating back to the 1950s, advances in machine learning are fairly recent and the technology is not well understood [P15]. For [P16], it is ultimately a question of whether there is already a consensus on the state of the art. For AI, the state of the art is constantly evolving, whereas for other sectors where standardisation works well, such as medical devices, the state of the art has been stable for years. [P3] recalls that when work began at JTC 21, there were still a lot of fantasies about what AI was. Generative AI did not even existed. The field of AI is evolving rapidly, and standardisation efforts are struggling to keep pace. Until 2018, there were no standards for AI. The initial work launched by ISO therefore had to start from a very high level and be very general. Today, [P3] acknowledges that there is a desire to define more precise requirements in the standards, but the field is not sufficiently advanced. *"[Standards on AI] are desperate attempts to control something that is beyond our control"*[*], [P3] says. There is a risk that technology will evolve faster than regulation and standards. *"It takes almost three years to develop a standard. [...] And when I look at the evolution of AI between 2021 and 2024, it is enormous. And I was wondering whether we would not have obsolete standards before they are even published"*[*], says [P15]. However, all the experts insist on the need for standardisation, even if this takes time. *"We can't just sit back and do nothing"*[*], concludes [P15].

The IT world is not used to drafting hEN

While hENs are not new in Europe and are already widely used for product safety, standardisation experts working in the IT sector are not used to developing such standards [P11]. Indeed,

[28] By way of comparison, the Organisation for Economic Co-operation and Development (OECD) AI Principles were first adopted in 2019, while the OECD Privacy Principles date back to 1980.

[29] It should be noted that at the time of this interview, the AI Act had not yet been published, but that the three European institutions had already agreed on the text.

digital technologies have not been regulated through hENs, neither for the GDPR nor for any other previous piece of legislation. Therefore, experts do not know how the NLF works [P16].

[P5] explains that standardisation experts are not used to working with constraints. Sometimes, they want to say certain things but cannot because they have to stick to the framework of the AI Act and what is already defined in the legal text. But for hENs, experts cannot change the wording or obligations laid down in the AI Act, just complete it [P16]. *"We don't know how far we are allowed to hold the pen in this thing"*[*], says [P9].

Timing constraints

Most importantly, hENs come with a fixed deadline: the standardisation request sets the date for publication of hENs at 30 April 2025. This date cannot be postponed, as the hENs define the technical criteria that will be used by companies to assess the conformity of high-risk AI systems. Yet, this part of the legal text will come into force in summer 2026 and providers need time to adapt to new standards. For [P3], this deadline is a good thing: it acts as a driving force that pushes experts to work faster and results are obtained much more rapidly than in other fields. However, [P6] notes that this puts a lot of pressure on the experts to deliver results quickly, and increases their workload. [P12] warns that, because of the deadline, experts are working in a hurry, and that if they are rushed into developing standards quickly, this could undermine the quality of the final result. [P5] explains that, usually, it can take up to five years for a standard to be published, if at all.

JTC 21 began work on AI standards at the end of 2021, but at that time the ESOs were still waiting for a standardisation request. The first draft of the request was only sent to them at the end of 2022. [P8] believes that JTC 21 wasted a lot of time at the beginning. At first, the proposal for harmonised standards were more technical, on the evaluation of AI systems. Then the scope shifted, with a view to future harmonisation. But it has taken almost two years, since work began at CEN-CENELEC in early 2022, to define the right direction to take. Even if everything went according to plan, the publication of hENs at the beginning of 2025 already seemed optimistic. But given the delay in the launch of the trustworthiness framework, some experts believe that this deadline is no longer anything more than wishful thinking. [P11] admits that there is a growing discourse within JTC 21, putting forward excuses of a lack of material and human resources that would justify the delay of standards. Experts were reluctant to give us an estimate for the publication date, but a few unofficial dates circulate: initially postponed to August 2025, it seems now more reasonable to expect them around June 2026 [P5], although nothing was confirmed by the Commission nor the ESOs.

5.2 AI raises ethical and fundamental rights issues

The difficulty in standardising ethics and fundamental rights

AI raises ethical and fundamental rights questions, and the AI Act aims at protecting these fundamental rights. It is therefore clear that these normative questions will have to be tackled in standards (Gornet and Maxwell, 2024), and initiatives are being launched on these topics.

Ethical and fundamental rights standards for AI are a new area of interest for standards committees, far removed from their usual work, and these new topics are not very well received by standardisation experts, who are used to more "traditional" engineering standards. [P11] explains: *"In the IT world, we believe that ethics cannot be standardised. It is not something tangible. [...] So, we are not rejecting these topics, but we are not betting too much on them either. We know we*

*are going to do something on a fairly high-level framework, but we are not going to go into detail because that is impossible"**.

[P10] remembers that many experts were worried when JTC 21 first proposed ethical standards. [P10] explains that critics said that the topic was *"too normative"*, that standards should stay technical and that standards *"cannot decide what is good or wrong"*. But for [P10], this is a misunderstanding of the proposal. The purpose of standards relating to ethics is not to impose decisions, but to create an environment in which ethical decisions can be made [P2].

Similarly, legal experts are reticent about the idea of standardising fundamental rights. According to [P6], *"fundamental rights should not be standardised"*, only laws adopted through a democratic process can be. But what can be standardised are the conditions under which the use of AI complies with fundamental rights. For [P7], standards on fundamental rights should allow greater transparency and accountability for companies, in order to prove that companies have taken into account the risks to fundamental rights. However, [P6] admit that safety requirements defined by standards in other harmonised union legislation were easier to define than describing in a standard what has to be done to avoid being in breach of fundamental rights.

New interests in AI

Several experts noted that, unlike other IT areas, consumers and workers associations are heavily involved in AI standardisation [P2, P3, P10, P11, P16]. [P12] hypothesises that this is because they feel more concerned by AI and its dangers than by traditional software. For [P10], AI raises ethical issues that affect everyone, so civil society groups necessarily feel more legitimate to take part in the discussion. The hype of AI technologies is bringing more people in, because everybody wants to have a say on AI [P10, P16].

However, it should be noted that this diversity in AI standard setting is encouraged by the Commission. In both the AI Act and the standardisation request, the Commission calls for a "multi-stakeholder participation" to standardisation. This include bringing more SMEs, more societal stakeholders such as consumer representatives, and more academics to standardisation. While this perspective is welcomed by most of our experts, some mention that the inclusion of civil society stakeholders, who are less competent in technical matters and strongly defend their interests, complicates the discussion with industry actors and consensus building, which slows down the development of standards [P16].

5.3 High-level frameworks to tackle AI issues

Experts in CEN-CENELEC JTC 21 are currently working on several standards for AI[30], including standards intended to become hENs in support of the AI Act, but also other standards at the experts discretion. The field of AI is not yet very standardised [P12], but numerous initiatives are emerging, so much so that some experts speak of a *"deluge of standards"**[P4].

The AI Trustworthiness framework

The standardisation request to CEN-CENELEC includes ten subjects, but they will not necessarily map to ten standards. SR items can be addressed together in a standard, or separately in different standards, at the discretion of the ESOs. JTC 21 decided early on to group together all of the SR items in one single standard: the "AI trustworthiness framework".

[30]For a complete list of JTC 21 published standards and standards under development, see (CEN-CENELEC, n.d.a,n).

The framework is intended to be very structural and an entry point in standardisation [P4]. It is intended to be *"the glue"* between every item in the standardisation request [P16]. Indeed, the ambition of the framework is to be an umbrella standard covering the entire requirements of the AI Act, and which could point to resources, such as other standards, to enable interested stakeholders to go into more detail [P9]. The intention was to make it easier, for small companies in particular, to comply with the AI Act, so that they do not have to read dozens of standards [P9]. But this effort to simplify has proved to be a complex task which involves a great deal of work and pressure. Coordinating the work is one of the first problems, as different groups are working on different parts of the standards to cover different requirements. All of these contributions are interdependent, but not all groups work at the same pace [P11]. This titanic task is unlike any other standardisation work, and experts report that they have never seen anything like it [P11]. Indeed, standardisation generally aims to avoid overlap, but the trustworthiness framework covers many concepts that are already covered by existing standards, notably at ISO[31] [P8]. This leads experts to wonder about what the final result will be like.

In particular, the question arises as to what level of granularity the standards' requirements should adopt. Experts have agreed to include in the standard what they call HLR, for High Level Requirements. [P9] explains: *"[HLRs] are fairly generic, but they still give you something to work with for implementation purposes. They are not precise enough to tell you exactly how high a threshold should be, or that you need to use this or that technique to validate it. But they prepare the ground and introduce good practices and ideas. Their level is therefore a sort of intermediary between the law that tells you 'you have to be like this', and ultra-technical stuff"*[*]. However, problem arise when you consider each item independently. [P16] explains that for some requirements, there are already standards to draw on, such as ISO standards for data. But for others, such as human oversight, the AI Trustworthiness framework will be venturing into uncharted territory. For [P15], the AI Trustworthiness framework will end up being a mapping between the AI Act and other standards, referring for each item of the standardisation request to other more specific standards. However, as explained by [P16], it cannot refer to too many other standards, otherwise it would make compliance more complex, rather than simplify it. This simplification task is therefore enormous, as the Trustworthiness framework already contains hundreds of requirements, excluding the ones from outside standards [P16].

Other standards

AI standardisation efforts at CEN-CENELEC are now focusing on the development of standards for the standardisation request [P10]. Even some experts who originally worked on ISO standards admit that they have given up their international work to concentrate all their energy on hENs [P3]. However, work at SC 42 is also still in progress and well ahead of that on JTC 21[32].

Another standard is being developed in parallel with the AI trustworthiness framework, with a view to being harmonised: the "AI risk management" standard. This particular standard posed some problems because another standard covering the same subject had already been published by international SDOs: the ISO/IEC 42001 (2023) on AI management system. Thanks to the Vienna agreements, CEN-CENELEC is in the process of adopting the ISO/IEC standard at European level. However, the European Commission warned JTC 21 that the standard alone was not sufficient to cover the SR item on risk management and the corresponding essential requirement of the AI Act set out in Article 9 [P6]. At the time of the interviews, it was not yet known whether ISO/IEC 42001 would seek further harmonisation with substantial changes to adapt it to the European context, or

[31] Such as robustness or transparency.

[32] See all SC 42 standards on their website: (ISO, n.d.b).

whether JTC 21's standard on AI risk management would be the only hEN to address Article 9.

Apart from the two standards on trustworthiness and risk management, JTC 21 is also working on a variety of other standards, including standards to address ethics and fundamental rights questions. Examples include "Competence requirements for AI ethicists professionals" and "Impact assessment in the context of the EU Fundamental Rights" (CEN-CENELEC, n.d.b). However, as participation in the standardisation work for the two future hENs is very time consuming, experts are less inclined to take part in these groups [P10]. But the question of what will become of these draft standards is of great interest, as it will shed light on the possibility – or impossibility – of developing standards on ethics and fundamental rights questions.

5.4 The Commission supervises closely AI standards

The Commission supervises standardisation work

The European Commission is responsible for requesting and validating harmonised standards. Even before the AI Act, the Commission already had a team responsible for overseeing standardisation work [P4]. But with AI, experts report that the Commission is more involved than usual, intervening more and more in the standardisation process [P4, P6]. [P9] explains that the Commission's employees take part in the plenary meetings but much less in the working groups. Their objective is not to help draft standards, but to ensure their proper development.

This increased interest in the work of CEN-CENELEC can be explained by the high stakes around AI standards, as the AI Act strongly relies on them for practical implementation. For [P6], a representative of consumer interests, this is also due to the worrying state of the development of standards, which are lagging behind international standards and influenced by BigTech companies. According to [P6], the Commission is aware of the problems and is a little worried, but their participation is essential to keep the ship afloat. The Commission's main role is therefore to ensure that standardisation goes in the right direction. In particular, they check whether the standards that are supposed to support the AI Act are in line with the legal text [P4]. [P4] recalls that, initially, the industry was opposed to the AI trustworthiness framework, but that the Commission supported the initiative and helped it to see the light of day.

However, if Commission's employees are respected and listened to within JTC 21, they cannot be too active in the discussion [P5]. *"They don't want people to say that it is the European Commission's standard"**, [P4] reckons. They are therefore very careful to ensure that standards come from the industry, from field expertise. For [P4], the real problem is not that standards come from the industry, but that the industry represented is mainly made up of non-European companies that are trying to sabotage hENs. This supervisory role creates a complicated relationship between the JTC21 experts and those from the European Commission, the latter not wishing to get too involved but sometimes being forced to intervene and reiterate the objective of the work on hENs. At the same time, [P14] explains that *"they don't want to tell [JTC21 experts] what to do"* and are *"concerned about taking position"*. According to [P14], there is still work to be done to improve the way this relationship works, as the Commission is slowly figuring out its place and role.

The imperfect alternative of common specifications

The AI Act provides for an alternative solution in the event of the failure of hEN, called "common specifications". Common specifications are a type of technical standard[33], which can be established by the Commission in several cases: (i) when the standardisation request has not been accepted

[33] According to our definition of standard.

by the ESOs; (ii) when hENs are not delivered within the deadline; (iii) when the proposed hENs *"insufficiently address fundamental rights concerns"*; and (iv) when the hENs do not comply with the request (art. 41 AI Act). For [P6], this is a means put in place by the Commission to counter the ESOs' monopoly on drawing up standards and prevent the system from coming to a standstill.

Indeed, given the current state of the standards intended to be harmonised, with significant delays in the development process, it is likely that they will not be ready in time to meet the deadline. Would the Commission then use the common specifications mechanism? While some experts believe that common specifications are inevitable [P5], others do not believe that the Commission will resort to them [P9]. For [P5], CEN-CENELEC's failure will only become apparent at the last minute, when the Commission will have its back against the wall and it will be too late to draw up common specifications for the deadline. Common specifications will therefore been developed in a hurry.

[P6] admits that nobody knows what these common specifications will look like or who will write them. Although the Commission will be responsible for adopting them by means of implementing acts, it is still unclear who will draft the technical specifications. The Commission could draw up these standards itself, with internal experts, or ask outside parties to do so on its behalf. However, several experts believe that the Commission does not have the necessary expertise to draw up such documents itself [P9, P4]. [P9] explains that most of the Commission staff currently participating in CEN-CENELEC's work today, are for the most part policy experts, and do not have the necessary technical knowledge. The experts are therefore convinced that in the event of common specifications, the Commission will simply ask the same JTC 21 experts to draft the common specifications, but in a different context. For [P5], it would be a solution to avoid lobbying, by selecting only trusted experts. On the contrary, [P9] warns that all the usual standardisation procedures, in particular the consensus system, and everything that gives a standard its legitimacy, will be abandoned until standards are published.

6 Areas of agreement and disagreement between stakeholders

Many experts are highly critical of the way standardisation work. When asked about their frustrations or what they would change if they had the chance, we got a wide range of answers. When we further asked how the standardisation system could be improved, experts came up with imaginative solutions. However, it should be noted that the experts' experience of standardisation varies greatly according to the stakeholders group they represent, their background and their previous experience in standardisation. In this section, we attempt to summarise this wide range of experiences and the way in which the experts describe the difficulties they encounter and how to overcome them.

6.1 Are the processes too complex or do the new experts just need time to understand them?

The problem most often mentioned by participants is the complexity of the processes put in place by international and European organisations for proposing, drafting and adopting standards.

A new vocabulary to learn

The first difficulty is actually registering in a NSB. Some experts, who first took an interest in standardisation through AI and are therefore fairly recent to the standardisation world, tell of their difficulties in understanding the different membership statuses and deciphering the membership contract [P8]. Others found it difficult to join without paying the fees, even though they were

among the exceptions for which the fees were supposed to be waived. Some experts advise using an insider, someone from the same NSB, already registered, who can help through the steps and act as a point of contact within the NSB [P2].

But the real difficulties begin at the first meeting. Newcomers receive no assistance and discover a whole world with its own language and customs [P8]. [P10] recounts: *"You find yourself in the meeting room and you don't know nothing about how it works and you hear they talk about numbers, they talk about documents, and you say: 'what's going on?'. This is a very common situation. [...] It is kind of alienating because it is very weird that you are in a room and there are maybe other thirty people you don't know nothing about. And then there is a form of rituality at the beginning of each meeting where you need to introduce yourself and read the Code of Conduct and so on"*. The acronyms mentioned by [P10] are used everywhere, from the names of NSBs and SDOs, to document numbers, to the titles given to the stages in the drafting of a standard. It can thus prove challenging to understand the structure and the role of each groups and each person. Unfortunately, this vocabulary does not have to be learned once, but several times, as even if the general operation of the SDOs is fairly similar from one to another, the vocabulary used changes slightly. *"What is difficult is that there is the vocabulary of ISO, the vocabulary of IEC. There is the vocabulary of JTC1, which is the meeting between ISO and IEC, which is again different, an in-between. And then there is the CEN-CENELEC vocabulary, which is again different from all that"*[*], [P5] says.

Even the simple search for information can prove a gruelling task. Everything is tracked, minutes are taken of every meeting and every document, every proposal, roadmap, framework, is compiled on the online platform provided by CEN-CENELEC. As a result, hundreds of documents are uploaded to the platform with little to no sorting [P4].

A world with its own rules

Once a new expert has started to understand which group they can get involved with and for which tasks, they still have difficulty understanding how to get their ideas across. First of all, the standards development and voting process is highly complex. There are stages to go through before sending in proposals for standards or comments, and deadlines to meet. In addition, these rules may differ from one SDO to another [P9]. The adoption of standards is a case in point. Whereas at international level, one country equals one vote, at CEN-CENELEC, votes are weighted according to the importance of each country. In addition, there are several levels of voting where non-European countries are always invited to participate, but their vote only counts if the result of the vote between the other countries is not clear. The voting system is so complex that CEN-CENELEC has developed a tool to count the votes and calculate them automatically. *"To understand, you need a diploma"*[*], [P4] says ironically. Some experts, who have been involved with CEN-CENELEC for a long time, admit that they still do not understand all the processes [P9].

A standard way to draft standards

Even when processes are known, there is a certain way to draft standards for them to be accepted [P3]. There are writing customs when it comes to standards which, if not respected, result in the proposal being rejected. Experts have to learn over time, by trials and errors, or by taking inspiration from other standards. *"You imitate a lot. You look at other people's standards and the way they are written, especially those of people with more experience than you"*[*], [P9] explains. [P9] further recounts that when they first started at ISO, an expert with decades of experience in the field of standardisation sent them hundreds of comments to correct grammar, typos and forms that did not correspond to ISO's writing style. These writing rules are compiled in a document published by

ISO, the "ISO House Style", to guide the language, formatting and presentation of ISO documents (ISO, 2024). *"It is just editorial guidelines. It is a misuse of a particular verb, a formatting error, a comma you are not allowed to use here... It is unbelievable"**, [P9] says. But some rules are more implicit. [P3] remembers that when they first started out, they always quoted their sources until another expert told them that they were going to get into trouble: if they quoted too much, other experts would go look into the quotes and they would find something that was not completely clear to discredit the proposal. In the end, standards are supposed to set out requirements, not explain where these requirements come from [P3].

Processes slow negotiations and deter people from coming

Experts report that these heavy processes sometimes get in the way of efficiency. Some standards took years for the proposal to be accepted and the real work to begin. The numerous back and forth, the negotiations, the time it takes to vote on proposals or agree on a few wordings, are sometimes seen as a waste of time. [P8] recalls: *"To launch the trustworthiness standard proposal, it took two years just to write two paragraphs"**. Yet, for hENs specifically, the publication schedule imposed by the EU Commission is very short. The lengthy processes of SDOs therefore seem ill-suited to such urgency. This time spent on processes rather than meaningful discussions is even worse when SDOs try to cooperate, as the parallel development of standards by ISO and CEN requires voting and agreement on proposals from both sides [P9]. For [P8], these heavy processes were suited to in-person meetings but do not work well online. *"We suffer from processes that were imagined and defined in a different world"**, [P8] sights.

But most importantly, these complex processes deter people from investing time in standardisation, because the learning curve is steep, especially at the beginning. People come at a first meeting, then get discouraged and do not come back [P5]. For [P8], if experts miss a few meetings because of other obligations, they can easily get lost and this dissuades them from participating again. [P2] recounts: *"To enter the world of standards, you have to be a bit of a masochist. [...] People talk to you with numbers or acronyms all the time. [...] The effect of speaking in acronyms blocks the possibility for others to understand. So you have major decision-making power because you use the acronym"**. The complexity of the processes and vocabulary sometimes seem designed to prevent people from entering the world of standardisation. It acts as a kind of competence test to prove one's worth. Standards can therefore only be developed with stakeholders who are already familiar with this world. The same applies to the drafting of standards and the writing rules imposed by SDOs, excluding those who do not know the customs from making useful contributions. *"It is like playing a board game: if you do not understand the rules, you cannot play"**, [P11] summarises. [P15] explains that experts have to fully commit and invest a lot of time at the beginning if they want to be able to understand anything. Coming once or twice does not allow you to get used to the jargon. This necessity to invest time to comprehend this world and its codes hinders participation, when there are already few experts actively involved.

A question of experience?

The complexity and slowness of standardisation processes is a divisive issue. While these processes are widely criticised by experts who started standardisation with AI, long-standing industry experts explain that these processes have been written and refined over the years, now reaching a high level of maturity. In their view, all these processes and rules have been put in place to ensure the smooth running of the system and must not be tempered with. When asked about the problems of standardisation, they blame other experts who, in their view, do not respect these processes or

the chain of command [P12]. We note here that there is probably a generational conflict between the new experts and the older ones[34].

6.2 AI standardisation needs to attract more experts... But who?

Although the work of standardisation experts is extremely important, the job has many drawbacks. In particular, there is a shortage of experts, which makes the work more difficult and stressful for those who stay.

Very few experts are actively involved

Usually, when registering with the NSB, experts undertake to participate in standardisation work at European or international level, although there is no formal obligation or level of involvement required, as well as no consequences for non-participation. Experts can generally enter and leave discussions as they see fit, even if this is not necessarily welcomed by the other more invested stakeholders.

Very few experts are therefore actively involved in standardisation, compared to the hundreds of people registered. Although the data from CEN-CENELEC shows hundreds of registered experts, [P5] estimates that around fifteen people are actually active across all working groups. *"You end up with standards that are actually made by very few people"**, [P8] complains. The other registered experts do not participate in the drafting of standards, but simply carry out monitoring work. They observe the work being done, gather information and report back to their companies [P10]. This enables industry players to keep abreast of forthcoming regulations and stay one step ahead of the competition. From time to time, they attend a meeting and remain in the background without speaking, but most of the time, they simply monitor the emails sent by the SDOs [P5]. [P5] explains: *"Some people are only there to inform their boss. [...] It provides a quick access to documents"**.

But this behaviour is not to everyone's taste. [P5] explains that it makes it difficult to raise the alarm about the lack of experts in standardisation when figures show that hundreds of people signed up to participate. In addition, registered stakeholders advertise their involvement in standardisation on social media and apply for various projects – in research or industry – highlighting their standardisation expertise, when in fact they have never actively participated in working groups [P5].

The large number of experts with little involvement also makes it difficult to move discussions forward. As [P13] explains, the subject of AI attracts many people who come and go between discussions. In particular, some experts arrive well after the work of a working group has begun, do not necessarily look at the history and reopen debates that were dealt with long before their arrival. As a result, the group is forced to reach a new consensus on a subject that was supposed to be closed, wasting time and efficiency.

Involved experts have a heavy workload

To make up for this lack of experts, some of them try to get involved in all the working groups, forming a *"hard core"* of two or three people who are present everywhere [P12]. These experts explain that they are very involved because the working groups are short of people and they feel obliged to fill the gaps [P5]. The involvement of experts therefore varies greatly, from people who only read emails or go to meetings to listen, to people who focus on a specific working group and

[34] We are not using the term "new" here as a synonym for "inexperienced", as many of these experts already have several years' experience in standardisation, but to emphasise the fact that they started standardisation with AI, compared with more established experts who have sometimes been in this world for several decades.

devote all their time to it, to people who are part of all the groups at once. Experts' workloads thus depend on their level of involvement, as well as their working groups. Some groups are more active than others, with editors receiving dozens of comments and several contributions a week. On the other hand, other groups, particularly those working on standards that will not be harmonised, are struggling to attract participants [P10]. Different experts therefore report various working experiences.

For people who only focus on one topic, it can be manageable to keep it as a side activity. [P9] told us they devoted 300 hours a year to their working group, so about one day a week. But even a few hours a week can be a lot for experts who are not supported by a structure or company and who have to invest time in addition to their usual workload. *"It is interesting, but it is not supposed to be my job, so I am working overtime"**, [P5] confesses. In periods of heavy workload, a working group can meet weekly for around two hours, or even four hours for some. Depending on the activity of the groups and the number of groups in which the experts participate, the workload can vary from two hours a week to a full-time job [P12, P13]. Indeed, experts often have to work outside these meetings to keep the project moving forward. [P5] acknowledges that with just one or two hours a week, the work does not go very far, and that the experts need to invest more to make it worthwhile. Thus, some experts, who are supposed to work only part-time in standardisation, report that they actually spend much more time on this than their official quota [P10, P15]. [P3] also notes that the workload has increased since the standardisation request. [P12] does not welcome this increase in the number of meeting hours, which for them, does not mean that the group is necessarily more productive. Indeed, meetings can last for hours, sometimes over details, just so that a proposal can be rejected and everything needs to start over. For the experts that strives to be everywhere, all at once, meetings can represent up to 11h a week between SC 42 and JTC 21 [P5]. With meetings sometimes taking place at the same time, some experts admit they sometimes had two computers connected to two online meetings at the same time so that they could follow everything [P5]. Furthermore, as the ISO secretariat is located in the US, these meetings can take place very late at night for Europeans trying to keep up with ISO's work [P5, P15].

This investment in time, work and sometimes hours of sleep, can further deter people from coming. As [P11] explains: *"Recruiting people for whom this is not their main objective or main job is not easy, especially when you explain to them that they will have to get involved, but not lightly. It is a three-year cycle, at least, and you have to contribute. You cannot just be there one time and gone the next"**. Standardisation thus seems to be stuck in an eternal cycle, where fewer experts means more workload, but where more workload also means fewer experts.

Academic and SME experts have a hard time finding funding

Another reason keeping people away from standardisation is money. Indeed, standardisation work is voluntary work as people are not directly paid by standardisation organisations to work on standards. Nevertheless, this does not mean that experts are not paid at all. When they work in a company, monitoring discussions and advancement of standards, or participating in standards drafting, is often part of their job or mission tasks. Some organisations may also receive funding to assign people to standardisation. This is the case, for instance, of European consumer associations and trade unions [P6]. Researchers from public universities or research institutes, on the other hand, do not receive additional funding to participate in standardisation initiatives, which is often cited by academics as a barrier to entry [P5, P16].

First, academic researchers have to convince their university that it is really worth investing time in standardisation, even though there is no product to sell, unlike companies, which have a clearer interest in participating. Second, the travel expenses to go to plenary meeting can be quite expensive

as they take place all around the globe. Experts from academia often have to call on special grants to finance their travel to be there in person. The best known of these grants are distributed by StandICT. But according to some experts, these grants are neither sufficient nor well distributed [P5]. Grants are awarded to a few dozen people for the entire standardisation of digital technologies, which in the end does not represent much money dedicated to AI. But most importantly, this income is highly unstable and some well-established experts are often turned down. Grants are awarded by independent experts who do not necessarily have the expertise or knowledge of the inner dynamics of standardisation committees. For academic experts, it is therefore a heavy mental burden to have to apply every time, with the risk of being rejected. On the contrary, [P2] welcomes this extra money: *"It is not much, but it supports our activity"**. To compensate, many experts are multi-affiliated, seeking sources of income wherever they can. This involves teaching courses, working for a consulting firm or a private organisation, and so on. For [P8], this is understandable, as it is not in anyone's interest to register on their own to take part in standardisation efforts. Experts need to be sponsored by other structures to cope as best as they can.

This lack of financial resources creates a gap between large organisations, which can afford to pay for travel expenses and staff working hours, and smaller companies that sometimes have difficulty finding people with time to invest [P13]. But this gap is even more important between these companies and academic researchers, who can hardly use their university money to travel around the world for meetings [P5]. Some industry experts even admitted to us that they did not understand how academic experts managed to still get involved [P3]. For [P8], the lack of experts in standardisation today is therefore due to a combination of the time investment needed, and the difficulty of finding funding to cover the experts' activities: *"It is very difficult to find actors who have time to understand our codes, understand what we do, how we do it. Who has the time for all that, and who can be paid"**.

Academic researchers struggle to get recognition for their work

But apart from money, there are other drawbacks to being an academic researcher who wants to work in standardisation. There are constraints in the academic world, on teaching and producing academic articles [P8]. Although the way in which university systems operate depends on the country, in Europe academics are often asked to devote the majority of their work to research. In particular, they are encouraged to publish in high-quality journals and conferences. A researcher's reputation is therefore necessarily linked to the number of publications, the quality of their publishers and the number of citations their articles receive. However, all of this activity is necessarily reduced when academic experts spend time on standardisation initiatives. Some experts told us that they are putting their academic career at risk by investing so much time in standardisation [P5].

This notably comes from the absence of recognition of individual work as the involvement of the experts on standards is anonymous. Unlike academic articles for which they receive visibility, standards have no return on investment for academic experts. It is possible, however, to obtain a certificate of recognition of work, even if the expert's name does not appear on the standard, to prove that the expert did participate [P5]. Nonetheless, the criteria for what it means to "participate" are hard to define.

Taking everyone in, regardless of competences

The number of experts actively working on AI standardisation is so low that NSBs are trying to recruit as many new people as possible. This lack of experts also leads those who are active in

standardisation work to advertise as much as they can around them, in order to attract more people. [P9] acknowledges that they cannot afford to turn anyone away. *"At this point, I will take anyone who wants to come in. Today, we do not have enough experts. I am not going to start getting picky. There are so many standards in progress that there are entire areas where we are totally absent"**, explains [P4]. The lack of selection on entry to NSBs can also be explained by their business model, in which anyone who pays the price, i.e. the membership fees, can participate in standards setting.

But this lax approach to selecting new entrants raises the question of the real competences of standards experts. *"I don't know who is competent or not"**, admits [P4]. As a result, people with no previous experience of standardisation, or of AI on a technical standpoint, are nevertheless sometimes quickly promoted to editor or convenor positions if they show an interest in a given subject [P16]. *"If people pay, it means they are motivated, have skills and something to contribute. There is zero selection. After that, it is a question of collective intelligence"**. [P9] reckons that it is still quite rare to have people who are totally unfit, but that it can happen from time to time. *"I have been told by people who had joined a NLP* [35] *working group, 'I am coming because then I will know what NLP is'. It is a shame that NLP regulatory standards will be written by someone who came to find out what NLP is"**, recounts [P5]. [P3] thus question the use of the work "expert", claiming that people involved in standardisation are not really experts in anything[36]. Some of the experts actively involved in AI standardisation recognise this themselves. *"I am technologically obsolete"**, says [P11], a "governance" expert, involved in various standardisation activities but who is not an AI specialist.

However, beyond technical expertise, knowledge of standardisation processes is essential for experts who want to get involved. [P5] admits that even if some people do not have the necessary background to take part in technical discussions, they can still contribute to the strategic aspects by setting up cooperative ventures or organising the work. Nevertheless, problems arise when non-technical experts take over technical subjects. The content of standards then runs the risk of becoming more political than technical[37].

Computer science experts do not feel legitimate

On the contrary, it is often computer science experts that do not feel legitimate to work on standardisation. Some start the interview by insisting on the fact that their background is not in standardisation [P7]. Others say that they do not feel competent in matters of standardisation, even when they have been the main contributor to a standard [P3], or say that they should not have led a standard because of their lack of competence [P16]. Finally, some experts repeated several times during the interview that they had only been involved in standardisation for a few years [P15]. Individual legitimacy therefore seems difficult to build in the world of standardisation.

This phenomenon can be explained as, contrary to what their name entails, technical standards are rarely very technical. This is specifically true for AI where standardisation work is just beginning and first works are necessary more high-level. But writing high-level requirements is something that technical experts, such as researchers in computer science or engineers, are not used to do, and that they do not often like to do [P8]. *"Writing requirements like that, this is not our job"**, says [P8]. People are impressed, they see standards as a particular type of document that they are not qualified to write. Even when technical experts manage to take the first step of registering to participate in standardisation efforts, they are greeted by discussions in which they do not feel confident, which

[35] Natural Language Processing

[36] As a reminder, we have chosen to use the term "standardisation experts" because it how the SDOs refer to the individuals working on standards (ISO, n.d.c).

[37] See Section 6.4.

are more strategic than technical. *"I felt like I was walking into the Assembly's legislative process"**, jokes [P3]. Computer science experts in particular can get frustrated, as *"economic, strategic and business incentives"**generally take precedence over technical discussions [P15].

The reticence of technical experts to work on standards may also be due to the global standardisation system based on national structures where experts represent their country of origin. [P8] believes that this sovereign mission is what drives certain expert profiles towards standardisation, but it is also what puts off more technical profiles. In these organisations, knowledge of the system itself is sometimes more valuable than technical knowledge. This is even truer for European organisations, where standards have an intricate relationship with the law. [P14] admits that for their work at CEN-CENELEC, they use their legal knowledge of the AI Act and the New Legislative Framework more often than their technical knowledge of AI.

Personal difficulties depend on the expert's stakeholders group

It is undeniable that there is a great difference between the experience of academic, civil society and SME experts in standardisation and that of larger companies experts. Whereas academic experts often find it difficult to reconcile their career goals with their standardisation activities, working overtime and struggling to find funding, experts employed by a company are paid to follow standardisation initiatives, even if this is not always a full-time assignment, which facilitates their participation. Industry experts therefore have more time to contribute or take leadership roles. Academic researchers involved in standardisation often find themselves more isolated than industry experts. Even when they have benefited from an inside contact that has brought them in, they have no formal links with anyone and have no specific interests outside their own. They often have to discover this world and its rules for themselves and struggle to fit in. On the other hand, experts from big companies often already have a colleague or manager working with them and, depending on the size of the company, may even have a team of several people to work with. They subsequently feel less isolated.

6.3 International influences: saving time or threatening sovereignty?

ISO and CEN are accustomed to cooperating under the Vienna agreements. But this cooperation, and in particular the adoption of international standards by Europe, may raise questions of sovereignty.

ISO and CEN: a continuity of the same world

ISO/IEC SC 42 and CEN-CENELEC JTC 21 do not operate in the same geographical area. SC 42 secretariat is American and their working groups welcome members from all over the world. On the contrary, JTC 21 is limited to European countries and some affiliates. However, many of the experts we interviewed pointed out that the same people actually work on both committees. Indeed, the experts who are truly invested, and do not only monitor the activities of the committees, usually participate to both SC 42 and JTC 21 [P2]. This include the few "core" experts who are omnipresent and who take part in almost all working groups [P3]. [P9] estimates that about 80% of JTC 21 experts are also in SC 42. It seems, however, that the international level gather more experts, thus completing the overall picture alongside Europeans. But European experts are only a subset of international experts. The only exception is consumer organisations and various European associations, which have the right to participate directly in CEN-CENELEC but, as they are not part of any NSB, have no say in international standardisation [P11].

Nevertheless, the connection between SC 42 and JTC 21 does not stop there. First, the two committees use the same IT tools, such as the same login for experts, which is shared between the two online platforms. *"You see, it is basically the same world"**, concludes [P8]. But above all, they often work together, thanks to the Vienna agreements, which enable them to adopt each other's standards and launch joint standardisation initiatives. When two groups from the two committees appear to be dealing with related issues, they officially appoint a liaison officer to represent the group at the meeting of the other committee. It is then possible to share documents, talk about future standards initiatives, ask for comments, and so on [P9].

ISO experts push for international standards to be adopted at European level

As many experts participate in both ISO and CEN committees, they prefer not to work twice on similar subjects. Since ISO is ahead of the game in its standardisation work, many experts are advocating the adoption of ISO standards at European level rather than the development of new standards. According to [P8], these experts, who are also involved in international SDOs, come to CEN-CENELEC saying that ISO is already working on the subject and try to dissuade the European experts from launching a group on the same topic. For [P2], this avoids *"reinventing the wheel every time"**. It is indeed less costly for the companies involved in drafting the standard to have a single standard to develop [P15]. It is also easier for companies to comply with a single standard than with a multitude of different standards. So, at the same time, these experts are pressing for international standards to be adopted without modification by JTC 21 [P6]. For [P5], the experts working at ISO have an interest in turning JTC 21 into an *"empty shell"**that simply enacts what has been decided at ISO.

But these efforts are coming up against resistance from European groups. *"ISO is trying to bypass us on European standards, but they are not succeeding"**, says [P4]. These victories are, however, not perceived as such by everyone. [P6] points out that many ISO standards have nevertheless been adopted, or are in the process of being adopted, at European level, only they are not yet on the way to becoming hENs. But this possibility is not entirely excluded.

Adopting ISO standards poses issues of sovereignty

However, the adoption of international standards by European committees raises issues of sovereignty. Europe wants to retain control over its standards, particularly when they are to be used to support legislation, as is the case for hENs under the AI Act. [P8] discusses this possibility: *"As a result, the European standard that offers a presumption of conformity is in fact an ISO standard that was developed in collaboration with the Russians and the Americans, and even without taking European regulations into account, either because it has a broader scope, or because that was not its mission anyway. The standard may even have been developed before the AI Act"**. In fact, ISO standards were not developed with a view to implementing the AI Act, but for economic reasons. The lack of AI standards until 2018 had simply created a demand and therefore a market. *"They don't care about the IA Act in international organisations"**, adds [P6]. As such, many ISO standards are not fit for the AI Act [P15]. For [P2], this reluctance to adopt ISO standards can be explained by the fact that in Europe, there is a focus on fundamental human rights and European values, which are not shared at international level. This can be seen, for example, in the emphasis placed on fundamental rights in the AI Act and recent initiatives to include ethical and fundamental rights issues in European standards[38].

[38]To have the opinions of our experts on the feasibility of such initiatives, see Section 5.2 of this work.

Among the ISO standards that have been adopted at European level is ISO/IEC 22898, the *"bible of AI terminology"*[P5], which compiles all the terms relating to AI. For some experts, this prevents European players from having a say on the definitions of terms that will ultimately influence European standards. [P5] explains that it is impossible, for example, to deviate from the definition of "transparency" imposed by this ISO standard, even if European groups decide to tackle this issue. A standard on transparency will then have to be aligned with the definition in ISO/IEC 22898 when defining requirements. This poses problems when the definition does not correspond to European political interests. Indeed, today, the definition of transparency for AI refers exclusively to the transparency of outputs and not to the transparency of the system itself. According to [P5], this definition suits companies who do not want to give access to their system. Introducing the notion of transparency of the system into the standards could make it possible to challenge companies on this notion when reference is made to "transparency" in legal texts.

For [P9], the roots this problem lie in the Vienna agreements: *"I am caricaturing here, but [the Vienna agreements] say that Europe voluntarily relinquishes its sovereignty to ISO as long as ISO considers that they are interested"*. But for [P11], who is also engaged in other standardisation activities at ISO outside of AI, the adoption of international standards is a necessary concession, as ESOs have no time to do otherwise given the deadlines imposed by the Commission with the AI Act. JTC 21 therefore needs to keep moving forward and stop looking in the rear-view mirror. [P11] recognises that there is a lack of confidence in international standards, but, to them, it is not justified.

Opinions are therefore divided on the benefits of ISO standards for European standards. While many of the experts who initially worked on these ISO standards are in favour of their adoption in Europe, including as hENs, new experts usually want to renegotiate from scratch, which could delay standards but would give them a more sovereign approach.

Capturing the interest of European companies

For some experts, this mistrust of international standards can be explained by the fact that many of the companies involved in standardisation are American or Chinese BigTech companies. On the contrary, European companies are virtually absent from the discussions. While this is already true at European level, there is a balance brought about by the participation of consumer associations who are absent from international groups. For [P11], sovereignty issues could be addressed through the participation of more European companies in standardisation, whether at international or even European level. However, [P9] notes that this strongly depends on the country. In Germany for instance, there is a strong culture of standards and companies are well aware of their importance. On the contrary, this is not the case in France. According to [P11], it is impossible to compete with American or Chinese companies, because European companies are not as powerful. On the contrary, [P9] believes that in standardisation, all the players, even the smallest, can have a seat at the table. It is simply a question of investment.

And indeed, many big European companies could get involved if they wanted to, because the human cost is not much compared with their number of employees or their investment in other areas. But they do not get involved because they cannot see the economic benefits. For [P4] it is because there are no visible short-term interests and they fail to reason in the long term. *"It is a cruel lack of strategic vision. [These companies] are incapable of seeing the return on investment of their activity beyond a quarter or a year. When we tell them 'No, but you have to write the standard now, so that in 3 or 4 years' time, you will dominate the market because your standard will be the rule', they say 'that's too far away, too uncertain, what counts is now"'*, explains [P9]. There is a paradox in that some companies are involved in major partnerships and collaborative projects

that are quite similar to standardisation work, but they are not directly involved in standardisation. *"We have large companies who find it hard to understand, who say 'we will see, we will manage with the standard'. You are joking. You invest tens of millions in robustness and you are not even involved in drawing up the standards that will tell you what robustness is. Maybe everything you are doing will be thrown in the bin"**, laments [P4].

It is difficult to quantify the return on investment, but it does exist [P10]. *"When you write a report or do your annual review, you find it hard to say 'I helped save this much' or 'I have produced this much', because it is not quantifiable. You have certainly saved your company money because you have influenced a standard that could have been negative for them or that could have had a financial impact on the way the company operates. But you cannot quantify it like that"**, [P11] explains. It is therefore necessary to make these European companies understand what this return on investment can be. *"You do not work in standardisation purely out of altruism. [...] There must be an interest, and very often a financial interest"**, [P11] adds. For [P4], it is therefore urgent to encourage these companies to participate in standardisation, because on the contrary, GAFAM and BATX have perfectly understood the long-term benefits of participating in standardisation and are making their voices heard.

6.4 The presence of industry: an opportunity for practical implementation or a risk of control?

The issue of industry participation in standardisation is already well documented in the literature. Here, we have given the floor to non-industry experts to explain their experience of working with companies, and to industry experts to defend the benefits of their participation.

A large representation of the industry

All our experts, without exception, mention the strong presence of industry in standardisation, even if this is not perceived in the same way by everyone. The data we collected and analysed confirms that industrial players are over-represented among the experts. *"Yes, but that is part of standardisation. That is what standardisation is all about. It is about big companies getting together and trying to reach a consensus on the same thing"**, explains [P6]. Standardisation committees are therefore contested arenas, as they are highly prone to lobbying [P7]. *"The Commission knows it, everyone knows it. We just deal with it"**, admits [P4].

This can be explained as the industry, specifically bigger companies, have the man power and money to allow for meaningful contribution. They can put people full time on a topic and pay for their travel expenses. They do so because they have financial and strategical advantages to participate. While some consider that this lobbying is not beneficial to standardisation, industry actors believe that they bring expertise that no-one else has. *"What is criticised is the predominance of industry. But the industry is the driving force [behind standardisation], both through innovation and through the resources it is able to deploy"**, [P11] explains. But the human resources deployed by industrial actors, go far beyond a simple help in standards development. According to [P5], they control many topics of interests, decide when – or if – initiatives should be launched and what the content of the standards should be.

Transnational corporations make use of the national system

Large companies are implementing strategies to influence the development of standards. Several experts explained to us that the strategy of these companies for controlling the system is to make use of the national structure of standardisation. Because they are transnational companies and

have staff in different countries around the world, they can claim to enlist experts in several NSBs. Once their experts are established within the different NSBs, they exert a form of influence in each country [P2]. This influence is even greater if an expert from these companies manages to get themselves elected head of delegation, in order to control a country's position at plenary meetings. *"It is easy, when you are making tens of billions in profits every quarter, to find fifty people to infiltrate the whole system of European standardisation. [...] They have a huge presence, and they are the ones determining the position of countries"**, explains [P4]. They coordinate between experts from different countries, but from the same company, to push forward the proposals that suit them and oppose those that they do not want. [P5] recounts: *"I presented [my proposal] and, within 10 seconds, seven hands went up. These seven people said 'I object, I object, I object...'. They were seven people from different countries, who had nothing to do with each other, except that they worked for the same company, for the same team leader"**. This experience is not an isolated event, as several experts report having witness the same type of behavior [P4, P6].

The consensus mechanism that underpins all standardisation decisions gives these companies an advantage, because if one of the experts finds reasons to oppose, the whole process can be blocked. A proposal is therefore only accepted if these industrial players are willing to accept it. *"We say it is the consensus, but really it is the consensus of people with interests"**, summarises [P4]. Exposing these experts is also made difficult by the fact that experts have no obligation to display their employer during plenary meetings. When experts are confronted with such a situation, they cannot prove that it was a corporate strategy to boycott a decision [P5]. The standardisation system is therefore very favourable to these large companies, which do not hesitate to use their power to defend their interests. *"Standardisation is the preserve of some big companies which have perfectly understood how it works"**, says [P4]. According to [P8], some experts have even left the world of standardisation because they were tired of this unwinnable battle against corporations.

Some companies have no interest in publishing standards

Industry experts hold the keys to standardisation because they have the numbers and the strategic positions in each national organisation. They often try to block standards, because it is in their interests that they are not published [P2]. Some experts point out that companies generally start by saying that such a standard is not necessary [P5]. When this works, it avoids any negotiation. But when they cannot completely block a standard, companies usually manage to keep the discussions going for longer, in order to gain time. *"There are other strategies that involve nitpicking every word, dragging things out and having the standard arrive three years later"**, [P4] explains. [P15] describes the strategy of these actors who prefer to block the standard: *"All I have to do is [spend] three hours on a paragraph. Nobody has the right to tell me to shut up or anything like that because I can always come back. 'No, no, I don't like that sentence'. Instead of moving on, I block it out. At a certain point, I scare off the experts. And if the experts get fed up and leave, [the standard] will never be finished"**.

Some experts, particularly those with a background in computer science, get easily bored in these interminable discussions. [P5] reports having spent hours in working group meetings just to look at an Excel sheet. For [P3], these companies are dishonest, because they do not accept any propositions. There is no negotiating ground.

Some of the experts we interviewed believe that there is a fundamental paradox in standardisation, because the main contributors have an interest in not publishing these standards. As [P9] points out, unlike other fields, standardisation of AI is not a necessity. Indeed, the Telecommunication industry needs standards because phones which cannot call other phones are useless. On the contrary, today, while it is sometimes necessary to be able to integrate AI into downstream

applications, most of the time AI systems can be used on their own. This reduces the incentive for companies to collaborate in developing standards. [P3] explains that this is what happens in certain working groups, which are dormant because they are mainly made up of industry experts who have no interest in promoting a standard. Standardisation then enters a game of appearances in which industry experts are forced to show that they are contributing, but without doing too much at the same time.

However, as [P5] points out, the existence of hENs primarily benefits SMEs, as large companies have the financial means to pay for alternative compliance frameworks. If the attempt not to publish standards succeeds, it is therefore small businesses that will pay the price.

Some companies push for empty standards

Often the main concern of the industry is to ensure that the standard does not contain too many strict requirements that would hinder the companies' economic interests. According to experts from academia, consumer organisations and SMEs, large companies have a habit of blocking technical contributions to ensure that standards remains as vague as possible. [P5] explains that the general strategy is to prevent other experts from making significant contributions. For example, to avoid introducing metrics into standards, industry experts claim that the field is not mature enough [P5]. They also advocate for more guidance and fewer strict requirements. To achieve their ends, they would for instance submit comments when drafting the standard, which try to get rid of important keywords [P9]. Certain words which appear in the AI Act can then be left out of the standards. As a result, the standards are not fully operational [P4]. [P5] cites the case of ISO 5259 on data representativeness, where the definition goes around in circles, defining representativeness as the number of representative elements in a dataset. Similarly, "performance" is defined by ISO in standard 22898, simply as a "measurable result". As a result, these standards are useless to complement legal texts.

Another widely cited example is ISO/IEC 42001 (2023) on management system for AI, inspired by other similar standards, such as ISO 9001 (2015) on quality management systems. Like 9001, 42001 aims to standardise a company's processes, not its products. Therefore, it does not contain too many technical details. For [P1], this is a necessity, in order to be as independent as possible of technologies or practices which could become obsolete. [P1] explains: *"[In 42001] we say: 'the organisation must define its performance requirements, document them, verify them, demonstrate that it has indeed achieved the requirements it has set itself' [...]. But we are not going to set the thresholds"*[*]. The certification audit subsequently verifies whether the company has actually achieved the objective it set itself [P1]. Although management system standards are a great success in companies all over the world, some of the experts we interviewed are very critical of the approach of this type of standard, which they feel is not strict enough [P6]. They feel that these standards leave too much to the discretion of the company, making certification pointless. For [P5], there is no doubt that the 42001 standard does not say much because the main drafter is the industry itself. These large companies will then comply with this standard which they helped to draft, in order to obtain a certification mark that they can use for marketing purposes.

[P5] further warns that standards on management systems are not designed for smaller companies and could kill businesses if they were imposed on everyone, as if 42001 became a hEN. According to [P13], an expert from an SME, when it comes to standardisation, it is necessary to differentiate between the interests of large companies and those of smaller companies, which generally prefer to receive specific instructions on what to do. *"There is industry and industry"*, says [P13]. SMEs are generally more specialised and therefore have more specific needs. For example, developers and deployers of AI systems will not necessarily have the same incentives in standardisation. However,

SME experts report that BigTech companies, who operate at an horizontal level, across sectors, do not listen to companies who are operating at vertical level [P9]. For [P13], it is important for the SME's voices to be heard, as today there is *"too many of one voice"*, that of larger companies.

On the contrary, some experts, even outside the industry, told us that if standards were to set requirements that were too precise but ill-adapted, this could kill the industry [P16]. It is therefore difficult to find the right balance between requirements that are too precise and requirements that are too high-level, particularly when the standards are horizontal, such as the AI Trustworthiness framework, and it is therefore not possible to rely on contextual elements.

To summarise, standards are not neutral. [P4] explains: *"When you don't have this critical view of how standards are developed, you take them as they are, without questioning where they come from. But there has been a whole process and some people have managed to ensure that the standard does not hold them back. Standards are a tool of strategic and economic warfare. People don't understand that. Given the cost, standards are not developed by philanthropists. They are made by people with economic interests. And some people have an interest in the standard being empty. [...] Everything they have written is in line with their product policy. There is a whole business model behind it"**. But this emptiness in standards is even more problematic when standards are intended to become hENs. [P4] explains that this a corporate strategy to influence regulation: *"Companies do not really have a say in the drafting of legislation, but they do in the drafting of harmonised standards. By putting blurry, empty, hollow, vague things, and not things that are too precise, it is possible to screw up harmonised standards"**.

Different entities have different strategy to influence standardisation

To gain the upper hand on standards, many companies are developing a standardisation strategy. Large companies therefore have a "chief standardisation officer" or a similar role, specifically dedicated to organising the groups of experts working for the company in order to define clear objectives and voting strategies. For [P11], it is all about placing one's pieces on the chessboard. For companies, it is important to know the stakes for each standard and decide whether to get involved or not, and what to contribute. For instance, experts report that they were asked to focus all the efforts on the standards supporting the AI Act [P3]. This is why so many people in standardisation are just dormant and not participating actively in standardisation efforts: they monitor the group for the company and alert their hierarchy when a topic of interest is being discussed.

But strategies vary from company to company. Some say they only have governance experts scattered all over the different working groups. [P12] explains how it works in their company: *"In our profiles, we are 100% dedicated to standardisation and we can cover several subjects, or fields, such as contributing in cybersecurity as well as AI. This means that we are not extremely specialised or in-depth specialists in technical subjects. But we are technical enough, obviously, to understand the subject and what is at stake. More importantly, we are going to take the know-how that interests us within the company, and take positions and make contributions based on that know-how"**.

Other companies, on the other hand, concentrate on a few working groups and send in technical experts who can make contributions in line with the company's objectives [P3]. They are specialist engineers, computer scientists or machine learning researchers, already employed by the company, but who have never set foot in standardisation. They are then asked to take the lead on a specific standard that is deemed important for the company.

Civil society groups are also using a precision shooting strategy to organise their standardisation work. They have experts who lead the team and help coordinate it, while others take an active part in the discussions and make contributions. These groups prioritise notably standards on risk management, trustworthiness, fundamental rights impact assessments and conformity assessments

[P7]. *"One of our strategy is 'contribute, contribute, contribute'. [...] You want to be on the table to be heard. [...] I think that is a big part of it really, just trying to make sure that your agenda is in the mix. You cannot determine the end outcome quite so much. [...] But the more you contribute, the more influence you have"*, explains [P7].

Another strategy often mentioned by the experts during the interviews, is to hire consultants [P5, P8, P11, P16]. According to [P5], this strategy is mainly being implemented by Chinese companies to counter the standardisation strategies of American companies. Even when asked to state their employer, these experts may simply display their consulting firm, thereby concealing the client who is actually paying them and thus the company whose interests they represent. *"It is even worse because it is not transparent. The guy comes to a meeting, he is there, he works as a consultant, but you don't know who he works for"**, explains [P11]. This strategy is more expensive for companies, but it is more discreet and gives them rapid access to technical experts. *"The Americans do it too. Except that the Chinese do it even more, because they pay double, or triple, or quadruple. [...] They have unlimited budget"**, adds [P11]. Experts recount that Chinese companies try to hire people from American companies in order to recruit more experts in standardisation [P5, P11]. Ultimately, the more companies invest in standardisation, the more powerful they become in this field.

Balancing companies and national interests

One of the biggest questions in standardisation is the extent to which experts represent the interests of their country as opposed to those of their home institution. For instance, some experts work in American or Chinese companies but in a European country. Therefore they represent the interest of their company, of their country and of Europe. *"You have to be a bit schizophrenic"**, admits [P11]. *"You have to remember who is paying you, but at the same time you have a dual allegiance"**. Many experts find it difficult to decipher the reasons behind the actions of other members. *"Who do you actually represent? To what extent is [Expert name] the voice of [Company name]? To what extent the questions he asked us – which were difficult for us – to what extent that was not just him, as an expert in standardisation processes, who was asking them?"**, wonders [P8].

For [P8], what is expressed is above all the employer's interest. [P4] adds that experts tend to present themselves as representatives of their country, but that this is in fact a disguise for expressing the positions of their companies. Some of the industry experts we interviewed do not hide it: *"When you are doing standardisation, you are doing lobbying"**, admits [P11]. Even outside the industry, experts reckon that everyone lobbies to defend their interests, including the civil society: *"if you are a lawyer and you are protecting workers, you will say that workers are not protected enough"*, says [P16].

On the contrary, some experts are very attached to their neutrality, and explain that when they express a point of view, they do so as experts in the field, and not as representatives of a company [P9]. *"There is no such thing as the [Company name] philosophy. In reality, it is a problem of small people who have a very important role. Everyone is trying to get a bit of visibility, to contribute something positive. So I strongly believe that we need to involve all these groups and give them space"**, says [P2]. In reality, experts explain that it is a question of balancing interests. For [P11], it is ultimately about intellectual honestly, although they recognise that it is difficult to make decisions when their company's instructions and their personal convictions are contradictory.

A system designed for industry experts

Despite the will of European institutions and the SDOs themselves to diversify the profiles found in standardisation, and aim to represent the various interests of society as a whole, these groups are

still dominated mostly by big industrial players. There is therefore a gap between what is stated in official communications about AI standardisation and what actually happens behind closed doors [P15].

The *"plurality of voices"* [P13] which are supposed to coexist in standardisation and give meaning to the consensus mechanism, seem to be drowned out by the voice of large companies which can afford to participate actively and through different countries. The entire standardisation system seems to have been designed by and for these stakeholders, with specific processes, customs and vocabulary inspired by the management systems of industrial groups. It is a world that new industry experts also have to discover, but one that is much harder for experts from academia or civil society to understand. Standardisation therefore is a sphere where everyone is theoretically welcomed, but where the efforts to get in and stay invested are different for the various categories of stakeholders.

The presence of the industry in standardisation is both its strength, as it is closer to the concerns of stakeholders, and its weakness, as it is more prone to lobbying from big companies. All experts outside of BigTech companies mention the lobbying from the industry as a main problem of standardisation. On the other hand, BigTech experts acknowledge that there is a distrust of large companies, but maintain that their perspective is necessary for standardisation [P11, P12] – an argument supported by other experts, even outside these groups [P2].

The content of standards is another point of divergence, but it does not necessarily follow the same pattern of separation between the industry and all the others. Indeed, while many industry experts support standards that do not necessarily prescribe too many technical measures, experts from other parties can also agree to this. Some experts would prefer standards to focus more on processes and governance, as they feel that technology is not ready for stricter standardisation. Others think that standards that are too entangled with normative issues should not be making specific decisions either. We therefore heard similar rhetoric from industry experts, calling for standards on risk management that could allow companies to decide their own thresholds, and from civil society stakeholders who explained that the only way to guarantee the protection of fundamental rights through standardisation was to demand greater transparency. In both cases, standards remain at a very high level, not defining technical requirements, but requiring companies to make their own decisions and document these decisions.

On the contrary, we have heard opposite arguments from computer science experts, mostly from the academia. They claim that standards should contain as many technical elements as possible in order to avoid loopholes that companies could use to avoid overly restrictive regulation, as is the case with the definition of transparency.

6.5 Can we improve the current system?

When asked to consider improvements to the current system, the experts did not propose changes to the processes themselves, but rather ways of reducing their potential negative effects.

Introduce a mentoring or training system

To counter heavy processes, many experts suggested means to ensure that all members are familiar with processes or could bring themselves up to speed quickly when they arrived in a NSB. For [P10], having people knowledgeable about how standardisation works could help speed up processes. This would prevent meetings being disrupted by people asking questions about processes [P10], or people making mistakes when leading work on standards [P5].

A simple way of achieving this would be to organise some form of training when people arrive at the NSBs. In addition to speeding up processes, it would make it easier for people to participate

and enjoy standardisation work. *"I think this is a responsibility of national bodies"*, says [P10]. Although some NSBs provide a few documents to familiarise experts with standardisation, such as a list of acronyms and their meanings, they could also organise voluntary training sessions for experts who would feel the need. However, [P10] acknowledges that for smaller NSBs with only a few experts, this might be easier than for France or Germany where experts come in and out everyday.

Additionally to initial training, NSBs could put in place a mentoring system, whereby experienced players could help newcomers to learn the rules of standardisation. This already happens informally, with some experts saying that, when they arrived, someone took them under their wing [P11]. Training and mentoring are solutions that have already been implemented in many companies. However, they require a lot of investment that only big companies can afford [P2]. There is therefore an additional gap in access to standardisation work between member from big companies and the rest of the stakeholders.

Increase investments and recruit staff

Many of the problems encountered by the SDOs, and by the ESOs in particular, are due to a lack of money and a lack of manpower [P11]. *"When there are a lot of [experts], it is difficult for one person to block [the process]"**, recognises [P15]. Greater investment at European level could enable more people to take part, particularly academic researchers, in order to diversify the pool of experts, as requested by the European Commission. Indeed, the money offered by StandICT is praised by many experts, but it cannot be an expert's sole source of income. These investments could also benefit European NGOs. To date, only a few organisations are authorised to participate in CEN-CENELEC. Welcoming more organisations and providing them with the funding they need to play an active role in standardisation would help to level the playing field against the power of the industry. As well as increasing funding, awareness-raising campaigns are also needed to recruit academics [P15]. [P15] also mentions that initiatives could be put in place to promote the company whose experts are actively involved, to encourage more people to come.

In addition, some experts propose that CEN-CENELEC should employ full-time staff to help with projects, not necessarily to take part in discussions on content, but to help the convenors and editors coordinate standardisation work [P8]. They could, for instance, help them organise group meetings, take minutes, and draft standards under the supervision of the experts. [P11] suggested that the European Commission could appoint project leaders to monitor discussions within the working groups, and speed up the development of standard, particularly with a view to the AI Act.

Impose more transparency during meetings

Another idea put forward by our experts is to have greater transparency within the standardisation system. There are already a large number of ways of tracing each decision, but for some, examining the minutes and comparing decisions is more like an investigation to put the pieces together than clear and direct information. To complete this system, JTC 21 experts have proposed during a meeting to record future meetings, at least the plenary sessions. However, this idea was rejected by consensus [P5]. But for some experts, transparency is above all a question of understanding the interests of others. One way of achieving this would be to display experts' affiliations.

Indeed, during meetings, there is no obligation to display one's employer, as experts are supposed to represent a form of neutrality with regard to their home institution[39]. As a result, most

[39]There is no obligation to display one's employer at European and international level. However, in some NSBs,

experts do not. The only obligation at plenary meetings is to display their surname, first name and country. This creates tensions because some experts fear that industry interests are interfering with standardisation work, but they are not allowed to point fingers [P5]. Indeed, according to the CEN-CENELEC Code of conduct, *"experts and observers are committed to revealing neither the identity nor the affiliation of other participants when using information received but not included in official minutes without prior consent"* (CEN-CENELEC, 2018). So, according to [P5], when an entire group opposes a proposal and all the members of that group belong to the same parent company, this behaviour, which should raise questions, is ignored because their affiliation is not public. No one can then contest, as otherwise they would risk being in breach of the code of conduct and being asked to leave.

In working group meetings, the rules are less strict and convenors can make up their own. In some groups, for instance, the leadership has asked experts to display their country and employer. This practice has then become more widespread over the last two years of JTC 21's existence and most groups now use it as a rule [P5]. Displaying affiliations at meetings also allows them to be recorded in the minutes, making it easier to trace lobbying activities. However, this does not solve the problem of consultants who will simply display their consulting firm and not their client, thus still concealing their true interests, but it is a first step towards more transparency.

Enable recognition of individual work

Today, academic researchers find it difficult to get involved in standardisation. Indeed, the entire standardisation system is not tailored to them, but rather to the industry. There are several reasons why academics are not more involved in standardisation: there is little funding available, there is no recognition of individual work, and standards are not very technical and academics do not want to get involved in political debates[40]. The European Commission itself has acknowledged that changes are necessary to attract more academics. In its recommendations on standardisation (European Commission, 2023b), the Commission states: *"The researchers should receive recognition for career development related to their contribution to standardisation"*. There is however no mention on what the solution to recognise their contribution should be. In addition, the Commission places the burden of finding these solutions on research institutes. [P5], themselves an academic researcher, suggests that the names of the contributors could appear directly on the standards, as they would for an academic article. But this solution is far from perfect.

First of all, this does not fully represent the work invested. For [P5], developing a standard can take up to five years. Summing this up in one line on a standard will not do the authors justice, but it would be a start. However, some experts are strongly opposed to this. Indeed, standards are supposed to be representative of everyone and should not single out individuals. *"I think standards are supposed to reflect the state of the art and best practice in a sector, not personal opinions. [...] So, no, I think it is right to remove any personification of standards. They are industry documents, representing a sector"*[*], [P9] explains. At a time when the Commission is increasingly urging the inclusion of more academics in standardisation, the question arises as to whether the standardisation system should adapt to the academic world, or whether it is up to the academic world to adapt to the standardisation system.

such as in France, affiliations must be displayed, at least at national meetings (AFNOR, 2016, p.5). However, in our experience, this is rarely the case in practice.

[40] See Section 6.2.

6.6 Should we re-imagine the system?

Some of the experts we interviewed were more radical in the solutions they envisaged. They believe that the standardisation system needs to be completely overhauled if it is to function properly.

An obsolete structure in a globalised world

Experts who want to change the system often start by criticising the structure based on national bodies. To them, in a globalised world, this structure is obsolete. [P8] explains that although NSBs make their own rules about who can join and become a member, most of the time, if the person speak the language used during meetings, this is enough to register. *"You could imagine a rule requiring you to be a citizen of the country, or to live there x% of the time, but there is no such rule"*[*], says [P8]. [P11] explains that there are multilingual experts who are registered with several NSBs at the same time and who can contribute to the positions of different countries. This is particularly useful for experts who are employed by different companies, representing their interests in different NSBs [P14].

For [P8], this national system no longer makes sense now that countries' interests are aligned: *"Are the views of France and Germany really so different today? [...] In the post-war period, people did not think about Germany in the same way as they do today. Today, I think you have a convergence of points of view [...]. So this structure based on delegations aims to balance points of view that will converge anyway"*[*]. For [P9], the problem is that companies and other structures take advantage of this system today. *"The whole standardisation system was imagined at a time when transnational companies did not exist. And so everything is structured around the countries that have their own national industry. It is a very pyramidal structure, with lots of little pyramids placed alongside each other. And nobody at the time thought that one day there would be horizontal players in all the pyramids, in all the countries. And that is where the GAFA have incredible power now, because they can manipulate all delegations at once. Something that would normally be inconceivable"*[*], [P9] explains.

A growing discontent about the business model

The experts also criticise the functioning of these national bodies, whose business model is based on memberships and the sale of standards. [P11], an industry expert, complains: *"[NSBs] are sometimes exorbitantly expensive. [...] You pay a membership fee to work at international, national or European level, you send resources at your own expense, you send people travel or whatever, you create a standard, you are the main contributor, you can be an editor, [...] and once the standard is finished, is published, you have to buy it"*[*].

[P3] also believe that it is not right for stakeholders to have to pay to access standards. For [P3], the very closed model on which standards are based is inexplicable in a world where the trend is towards free access to information on the web. *"It is a system from another century, it does not work at all"*[*], [P3] says. However, despite the discontent, the standardisation system is doing well, with ISO's total revenue from membership fees and the sale of standards exceeding forty five million euros a year (ISO, n.d.a)[41].

But what scandalises some experts the most is that harmonised standards are produced and financed in the same way, so that they are not openly accessible [P3]. However, as [P11] acknowledges, this business model is now being called into question. This dissatisfaction with standardisation is reflected in recent case law, which have ruled that hENs, in particular, should be made public[42].

[41] It should be noted that ISO's financial figures are given in Swiss francs. Today, 1 CHF is equivalent to 1.05 EUR.

[42] This decision of the Court of Justice of the European Union is known as Public.Ressource.Org (CJEU, 2024).

[P11] explains that some experts are in favour of "smart" open standards, although they admit that they do not know how such a system would work.

Rearranging groups

When asked what they would change in the system if they had the chance, some experts imagine alternative solutions, where forces could be distributed to balance interests, instead of separating by countries. *"Perhaps the balance needs to be found [...] between foreign-based megacorporations [...], small businesses and academics. Perhaps, in the end, delegations should be made on this basis"*[*], imagines [P8]. [P9] envisions a system where transnational companies would be separated from the NSBs and have their own group: *"Their voice should be considered as a country. So they become their own country and no longer have the right to intervene in national bodies. In other words, there is a country called [Company name A], and a country called [Company name B], which is separate"*[*]. This would force these companies to have only one voice and not to control the voices of the several countries.

But such a system could have multiple drawbacks. SMEs with an international presence could also be rejected from NSBs, or they could be forced to choose just one NSB in which to express their interests [P9]. Getting rid of the big companies would also mean that the country delegations would not have the expertise that these groups usually bring to the table. *"They've got experience, they know the processes, they can get things done and share knowledge"*[*], admits [P9]. Industry experts are obviously strongly opposed to this solution. However, [P11] admits that they would be happy to get rid of the "hegemony" of the NSBs, which are a major source of expenditure for companies, and to find another structure to participate in standardisation.

On the contrary, some would prefer to give more power to the NSBs, who currently have no say in the selection of experts. A solution was proposed by [P15], whereby NSBs would select experts independently of companies – and who pays the most, in order to have greater control over their national experts. Funding of the NSB would be independent of company participation and paid for by each company, which could then propose its expert to the NSB in a sort of recruitment process with no guarantee that its expert would be selected. This would oblige the experts not to take too strict a stance, or they risk not being re-elected. However, it is not clear how this "all companies pay" framework would be implemented in practice.

A system difficult to change

During the interviews, the experts were asked not to restrict themselves and to think of solutions as if they had a magic wand enabling them to change what they wanted instantly. However, things got more complicated when we asked them whether the solutions they proposed could really be implemented.

First of all, processes often seem untouchable because they are deeply rooted in the functioning of the standardisation system. This is because the rules are inherited from the parent bodies. For example, SC 42 inherits rules from JTC 1, which inherits them from ISO and IEC. So when a rule exists, it means that it has been validated by the entire chain of command. *"It is not easy to question something or to find a degree of freedom"*[*], reckons [P9]. Similarly, experts do not believe that it is possible today to modify the structure based on NSBs and organise the delegations differently. *"The system is already so locked down, so padlocked with rules, so no, something like that is impossible. We would have to create a new standardisation thing, completely new and different"*[*], says [P9].

When ask why they do not simply leave the NSBs, [P11] replies: *"To go where?"*[*]. Indeed, the system is based on the cooperation between the NSBs and the SDOs, which means that it

is impossible to participate to standards development without them. For [P11], the problem of the NSBs' business model is in fact inherited from ISO. These bodies, at national, European or international level, have a monopoly on standardisation. For [P8], the system does not change because stakeholders do not question it. There is a lack of organisation between them to propose an alternative solution. For [P15], the solution can only come from big companies, who have the economic power to demand change, or from the political side, which has the means to implement that change. But as [P4] points out, the problem is also monetary. Companies fund NSBs, so NSBs cannot afford to oppose them. NSBs therefore know that there is a problem with transnational companies strangling the whole system, but they cannot act for fear of losing their rent.

Not everyone wants this system to change

Only one expert told us he would not change anything [P12]. For some others, standardisation could be much better with just a few minimal changes. To our great surprise, none of the experts proposed simplifying the standardisation processes, such as the procedures for adopting or drafting standards. However, one of them mentioned the possibility of adding an appeals procedure to make it easier to challenge a decision.

Experts have different answers to the problems of standardisation today and how to solve them depending on their interest groups and how long they have been in standardisation. Indeed, new experts have only recently discovered this world and are indignant about the way it really works, while "governance" experts, usually from large companies, who are used to the existing dynamics, have no interest in changing them. They are therefore firmly opposed to the changes proposed by other experts, whether they be minor changes or, even more so, the total reconstruction of a new structure.

7 Discussion

7.1 An important world that will shape AI regulation

A study in the heat of standard making

CEN-CENELEC is working on AI standards since the end of 2021, and was asked by the Commission to draft the harmonised standards that will support the AI Act in 2022[43]. For now, CEN-CENELEC has adopted a few ISO standards on AI but has yet to develops its own, notably the harmonised standards. However, in the standardisation request, the Commission sets the deadline for these standards at 30 April 2025. We are therefore conducting this study at an exciting time, when it is possible to witness the birth of AI regulation, and at an exciting place, at the heart of the European standard making process.

But it is also a time where the stakes are high and tensions between stakeholders are therefore at their highest. We witnessed these tensions when, during the interviews, we heard different versions of the same stories told by different experts with different points of views. We also felt like although each expert was happy to talk to us, they did it mainly to defend their positions. Whatever the stakeholder groups, their intention was probably to use us, the interviewers, as a platform to carry a certain type of discourse. And the discourses we heard were often very committed, especially from stakeholders who are not part of large companies and who therefore find it harder to make their voices heard. This behavior is all the more normal as now is the time to make things happen, to make one's opinion heard and to influence standards in one way or another.

[43] An initial draft standardisation request was published at the time (European Commission, 2022).

In the heat of standard making, power dynamics are all the more interesting to analyse. A discussion on which criteria to include in a standard may hide a wider battle between companies, where each stakeholder strive to impose its interests. This is understandable, as the outcome of standardisation will have a major impact on the economic benefits for companies. Having power over standards therefore means having the power to regulate the market. Even without the European system based on the NLF, the economic power held by these documents, such as ISO standards, is unprecedented due to their strong reputation and widespread adoption throughout the world. It enables the organisations which control standards to steer the market in their favour and dominate the competition. In the case of harmonised standards, the stakes shift, as the legal effects they produce enable stakeholders to influence not only the market, but on the law itself.

But companies are not the only ones interested. Harmonised standards are also a formidable means for civil society organisations to assert the interests of the group they represent. Power is acquired by contributing more than others, by creating coalitions and pushing votes in a certain direction or by obtaining leadership roles, such as editor, convenor or head of delegation. Which country leads the discussions, or which company steer decisions, therefore becomes a question of governance, at a time when Europe fights to remain sovereign, but is impacted by transatlantic and Asian influences. As geopolitical and economic dynamics continue to permeate AI, the concept of "standards war" (Shapiro and Varian, 1999; Stango, 2004), formulated in the 90s, is more relevant than ever.

Diverse experience of standardisation but one common goal: publishing AI standards

For this study, we interviewed a broad sample of standardisation experts from different countries, sectors, areas of expertise and levels of experience. While we note that the experts are fairly consistent in their descriptions of standardisation work and processes, the criticisms they raise are different, and the solutions they imagine even more so. We have identified several areas of great divergence: their personal difficulties – if any – in working in standardisation, what standards should contain according to them, what they think are the problems with standardisation today, and what solutions they are considering. Indeed, standardisation is multi-faceted by definition, due to the variety of disciplinary fields and categories of stakeholders who are represented and who experience standardisation in different ways.

Competing interests create tensions that slow down discussions and delay standards. However, as the aim of standards committees is to publish standards, experts must inevitably find common ground to reach agreement. Ultimately, it is all about about aligning interests. But the task is colossal. While the BigTech often plays the role of the villain in the stories of some of our experts, for experts from these companies, it is necessary to get away from this Manichean representation. What is certain is that the truth is much more complicated than a two-sided story, with the big companies on one side and the others on the other. Even the academic experts we interviewed recognise that certain interests can sometimes conflict, because the big companies themselves cannot always be on the same side. For example, when geopolitical issues come into play, Chinese companies can team up with academic experts to block proposals from American companies. The map of the standardisation space is difficult to draw and is constantly changing according to which stakeholders decide to get involved and the positions they adopt. In this ever changing space, one constant remains: for the experts to reach an agreement, they have to work together. Several experts therefore stressed the need for mutual respect and understanding.

7.2 A small world seeking to open its doors

"entre-soi" in standardisation

AI standardisation is a very small world. The number of people actively involved is very low – according to some of the experts we interviewed, around fifteen people for all of the European standardisation initiatives – compared to the several hundreds of people registered in WG 4 alone, who are not active but simply monitoring the progress of standardisation work. We tried to interview as many "active" people as possible, but it was difficult to estimate their level of participation. This small number of people means that everyone knows everyone else in the world of AI standardisation. Experts regularly suggested names of other experts we could interview next, or told us they had heard we had interviewed a certain person because they had spoken to them. While this represents a challenge in itself in terms of guaranteeing anonymity, it also means that the daily lives of experts are influenced by a handful of stakeholders they see everyday.

While we have seen that experts find it hard to get into standardisation and learn the rules, and that many people get bored and only come for a few meetings before disappearing, those who manage to survive become masters of this field and even sell this expertise outside. As [P11] told us, standardisation is *"a job where experience is everything"**. It is also a closed world where it is hard to lie about one's involvement and expertise. An expert's reputation is based on the fact that they devote time to a specific subject and make themselves known.

Since negotiations are central, experts need to know each others. [P12] remembers that when they started out, they were too direct in their discussions with other members, too firm in their positions. Even more than diplomacy, this world is therefore about human relations. Experts make allies, friends and enemies, depending on how they behave towards each other. Tensions sometimes arise because of personality conflicts. This makes the world of AI standardisation even more complicated to decipher, because it is not always about group dynamics, but about individuals and their personal opinions.

A little-known system

There is a significant gap between the importance of standardisation and the interest shown in it by academic literature, the scientific world and the general public as a whole. There were a number of economic studies in the 1980s and 2000s, and then, with the NLF in Europe, legal literature also took up the subject. But standardisation remains a very niche subject, where the dynamics of standardisation and the actual content that is produced are rarely analysed. Therefore, computer scientists and engineers know little about the work of standards committees. *"It should be part of our state of the art"**, says [P8]. However, access to standards is expensive and creates a gap between the world of standardisation and the world of science. Similarly, the general public has rarely heard of it, with the possible exception of ISO. But even when they know the names, they find it hard to understand what is really going on behind the walls and why this activity exists in the first place.

As [P11] explains, there is a bad buzz about standards today, because they are seen as a brake on innovation. On the contrary, their positive effects are not often mentioned. [P6] points out that the role of standards is first and foremost interoperability. Standards enable many systems to function and simplify people's lives. Thanks to standards, phones can communicate, printers can use the same paper format, EU citizens can travel from one country to another on the same railway without having to change trains, they can use a USB stick on different computers, have a single charger for several electronic devices, use their credit card in cash dispensers in different countries, and so on. Standards therefore play an important role in the daily lives of citizens and, with the

NLF, they have an additional role in supporting European law. For these reasons, they constitute an important object of study which deserves more attention.

Removing barriers

If we had to highlight one thing that we noticed during these interviews, it would be the experts' willingness to talk, their openness and their kindness. With the exception of one person, all our interview requests were met with a positive response and we really felt that the interviewees were happy to share their expertise and help us understand their world a little better. Given the stakes involved, more and more people are trying to take part in the discussions, but there are still a number of obstacles to overcome, including heavy procedures, workloads and lack of recognition for individual work and funding, which mainly disadvantages academics. Thanks to strong networking and determination, some national delegations are fighting to be as diverse as possible. But there are still efforts to be done to make standardisation as accessible as possible. Having an even more diverse standardisation space would, first, enable more interests to be represented, balancing out the super-power that certain groups currently wield, but it would also lighten the workload of current experts.

Alongside the experts' proposal to improve the standardisation system, there is also the complementary task of bringing this world to a wider audience. For [P11], this can be achieved through education. While there are already ISO-developed programmes for communicating in schools and universities[44], this movement is still struggling to reach Europe. But it is also a cultural issue. [P11] explains that in Germany, it is not unusual to learn about standardisation at school. France, on the other hand, is lagging behind, although some companies are beginning to set up courses and partnerships with universities. We believe that there is a real need for information on standardisation, both at school and in the professional world. However, this education and awareness-raising cannot be left to a few industry actors. Although these players have a necessary perspective on this world, education on standardisation is not complete without the point of view of academics or civil society stakeholders, who must also be involved in these awareness-raising initiatives.

8 Limitations and future work

Since CEN-CENELEC JTC 21 is a European group, we tried to interview representatives from different countries. Yet, due to our connections with the French delegation, we interviewed a majority of experts registered through AFNOR: 10 out of 16[45]. We must also bear in mind that the data we have collected comes solely from WG 4 on Foundational and societal aspects of AI and may therefore not be representative of CEN-CENELEC as a whole. However, as the future main harmonised standard is being developed in this working group[46], we have reasons to believe that this is the most comprehensive working group, with the largest number of people registered.

The aim of this research work is, among other things, to highlight the systemic problems which exist in the current standardisation system, in order to try to find solutions. As a result, we work on a meso scale, looking at broad trends rather than individual trajectories and opinions. However, some of the problems raised by the study directly concern certain companies and individuals, whom some experts mentioned directly in the interviews. Nonetheless, in this work, we have chosen not to reveal any names of companies or organisations which are seen by some as problematic. We

[44]Such as young professionals programmes (ISO, n.d.d).
[45]Or 62.5% of French representatives.
[46]Namely, the AI trustworthiness framework. For more information, see Section 5.3.

take this decision knowing that it creates an additional limitation to our work: that of speaking in general terms without directly naming those responsible. We stand by this choice because we believe that it is not an obstacle to understanding the general power dynamics that we are trying to highlight with this work. If the standardisation system is to be improved, we believe it will be by changing the system and the rules themselves, not the players.

Finally, the main contribution of this work is to shed light on the emerging field of AI standardisation and its ecosystem at national, European and international level. Our sociological contribution is therefore limited, as work on these organisations is only just beginning. Future work could focus on a better typology of stakeholders, their professional trajectories and their interactions at the micro scale.

9 Conclusion

In this article, we presented the results of fieldwork at CEN-CENELEC, where we collected data and interviewed 16 standards experts currently working on AI-related standards.

This study enabled us to gain a better understanding of the variety of expert profiles, because although the industry plays an important role in standardisation organisations, a large number of members from civil society are also involved. Stakeholders find a wide range of interests in standardisation work, from the creation of a professional network to the gathering of experience, all of which seem to be profitable reasons for engaging in this work, even if the prospects are sometimes long in coming.

These testimonies also highlight the gap between the standardisation experiences of the various stakeholders. Experts mostly agree on the fact that they are understaffed. But experts which begin standardisation work with AI also complain about the overly lengthy and complex processes imposed by the organisation. Furthermore, the standardisation system is not adapted to academic researchers as there is little funding available and no recognition of individual work. Yet they are essential if Europe is to realise its ambition of having multi-stakeholder representation in AI standardisation. According to experts outside of large companies, the distribution of experts in national delegations further gives disproportionate power to transnational companies, which can afford to have representatives in several countries. This phenomenon is exacerbated by the financial and human cost of standardisation work, which only allows large companies to invest manpower in standardisation.

Regarding the content of standards, CEN-CENELEC has undertaken to develop a single standard to cover all the requirements of the AI Act: the "AI trustworthiness" standard. However, the amount of work to be done and the potential overlap with other standards complicates the task and means that this standard, and others like it, are falling behind schedule. Subsequently, there is a growing pressure to adopt existing international standards, particularly in the area of risk management. This pressure is exerted mainly by experts from large companies who also participate in international committees. But the adoption at European level of standards developed outside Europe raises political and sovereignty issues.

The solutions proposed by the experts range from small changes to the standardisation system, such as greater transparency and recognition of individual work, to a complete overhaul of the national-based system to replace it with a structure based on group interests. While radical change is unlikely at this stage, if the standards are not satisfactory, the European Commission may develop alternative frameworks, such as common specifications.

While the criticisms of standardisation which are resurfacing in the discourse of our experts are not entirely new, this is the first time, to the best of our knowledge, that standardisation experts

have been given the floor to address these issues themselves and propose solutions. This study is therefore aimed both at the general public, seeking to understand standardisation work, and at the standardisation experts themselves, in order to address unspoken issues and initiate discussion between different stakeholders groups. It could also help the European institutions to see the see the intricacies of the standardisation system and to take the appropriate actions to remain in control.

Standardisation is a highly diplomatic ecosystem where different entities try to impose their own vision, based on their economic and political interests. If AI is to be governed by technical standards, we need to shed light on the work produced within these private organisations and ask ourselves how we can best accompany them to ensure that AI standards will indeed support EU values and interests.

Acknowledgements

We would like to thank all the participants in this study for taking the time to talk to us. Each interview offered a new perspective and insight into the multi-faceted work of standardisation. We hope this study reflects and honours your different experiences and that this work, will contribute to a better understanding of the world of standardisation.

A Grid of themes for interviews

Each sub-theme – in **bold**, was addressed in all the interviews, but the questions were more flexible. The questions are given here as examples only. The sub-themes are grouped in more general themes – in *italic*, that were used to build the sections of this work and organise the discussion.

The expert's path in standardisation

Background. Ex: Could you introduce yourself? What is your background? Who do you work for?

Standardisation groups. Ex: Can you give us the names of the standards you are working on or have worked on at CEN-CENELEC, ISO/IEC and other organisations? What is/was your role (convenor, editor, etc.)?

Reasons for joining. Ex: Can you tell us how you got involved in standardisation? Why did you decide to get involved?

Organisation of work

Meetings. Ex: Can you tell us about how the standardisation work is organised? How often and for how long do you meet? How do you decide which subjects to cover and which elements to include in the standard?

NSBs (for experts outside of France). Ex: Could you tell us about the organisation within your NSB? How do you get in? What types of experts are involved? How often do you meet?

European Commission presence. Ex: Have you interacted with EU officials? Do you see them in meetings? Does their presence help or hinder standardisation efforts?

The content of AI standards

Type of content. Ex: For the standards you are working on, can you tell us what type of elements they contain? Are they definitions, metrics, requirements, etc? How precise are they?

Ethics. Ex: Can ethics and fundamental rights be standardised? If so, how?

Specificity of AI. Ex: Is there anything special about AI standardisation? If you have worked on other topics, how do they compare?

Strategy

Alliances. Ex: What other experts do you usually work with or talk to? Do you form groups or alliances?

Company policy. Ex: How many experts from your organisation/company/institute are involved in AI standardisation? How do you organised?

Difficulties and solutions

Personal experience Ex: What was positive about your experience in standardisation? What was negative? Were there any frustrations?

Changes and improvements Ex: If you could change anything in the standardisation system, what would you do? Do you it is feasible in practice?

B Standardisation experts' backgrounds and affiliations

ID	Affiliation	Background
P1	Institute	Governance
P2	Consulting	Humanities
P3	BigTech	Computer science
P4	Consulting	Governance
P5	Academia	Computer science
P6	Consumers	Humanities
P7	Academia	Humanities
P8	Institute	Computer science
P9	SME	Computer science
P10	Consulting	Humanities
P11	BigTech	Governance
P12	BigTech	Governance
P13	SME	Computer science
P14	Corporation	Governance
P15	Institute	Computer science
P16	Academia	Humanities

Table 1: Table of interviewed experts' backgrounds and main affiliations.

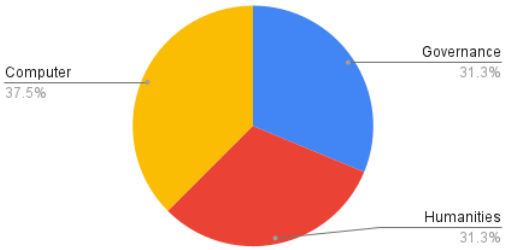

Figure 3: Pie chart of interviewed experts' background.

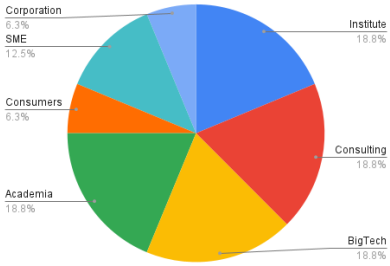

Figure 4: Pie chart of interviewed experts' main affiliation.

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