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the Innovation Creators Series

Standards for an EU Digital Single Market and industrial renaissance

Introduction

Standards are essential to the running of a healthy technology economy. Moreover, links exist between standards and public policy: policies affect standardisation while standards can express policy choices, as notably occurred with mobile telephony in Europe. This is why standards, and the way they are developed, continue to demand attention from policy makers.

An effective standards system benefits consumers and industry alike. For users, standards increase safety and choice. At an industrial level, open and inclusive standards allow players to develop complementary products and services, as well as help them secure more independence from larger companies or consortia. All this leads to a richer industrial ecosystem: this is why standardisation is also vital for ensuring a robust and sustainable drive in R&D investment.

It is crucial that European policy makers understand the global nature of standards and the impact of policy-making on this topic. When standards develop, normally on the basis of a consensus among stakeholders, they have a global dimension and this unlocks world-wide access for the resulting products or services. Policy makers can add a political vision to this process by giving voice to social and consumer needs and guide the role of European authorities in the forging of standards.

Yet, the policy role in standards probably should not be direct as their drafting requires technical expertise. Nevertheless, political support remains essential to encourage the emergence of workable rules on interoperability, for example. Only with vision and commitment will we see an increased adoption of ICT across Europe, in support of wider digital single market objectives.

Standards: important for the global economy, key for ICT markets

Standards reflect a consensus among interested parties, at a given point in time, about the main features of a product or service. The idea is for a standard to enable other companies to offer complementary or 'interoperable' products. While it is possible for business to succeed without standards, agreement on a product's main technical features can have distinct advantages.

The main benefit from standards is a lessening of technical and market fragmentation, which helps products reach a larger scale of exploitation and so achieve their full potential. With wider sales and distribution, products – and families of products - become more affordable which hastens adoption by businesses and consumers.

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'Interoperability' describes the ability to combine complementary products from different suppliers. A good example is the global mobile communication system. Thanks to common technical standards, calls can be made to anyone in the world regardless of the handset brand or country they are in.

In practice, interoperability is challenged in the current marketplace. Interoperability between devices and networks is not always straightforward, as there are quite a few walled gardens: some devices are attached to some networks and not others (for example in the US, early 4G LTE phones were not compatible with all networks); Internet platforms are not generally interoperable (Skype users cannot talk to Apple Facetime users).

More generally, there are also issues at software level where applications developed for one device operating system may not be used over another.

Beyond aiding product development, standards increase the independence of buyers from vendors as interoperability can help to switch from one vendor to another. In business and public procurement, standards can help support a fairer, transparent and more efficient procurement process.

Standards can also govern non-economic features of a product, like environmental impact or safety in use. As such, they can embody a political vision of how products should interact with society. For example, Europe has often pushed for increased consumer protection.

In addition, standards decrease barriers to market entry and improve access for small businesses. This is particularly true since ICT emerged as a major source of innovation. As such, standards are also important for the wider industrial 'ecology'. Indeed, the current challenge for a wide range of players and new-comers is to grasp opportunities from new technologies such as communication infrastructure, cyber-security, cloud storage or services, Internet of Things and machine-to-machine (M2M) communication services.

A strategic tool for Europe's DSM and competitiveness

In a context of varied national interests, a true EU digital single market (DSM) is almost inconceivable without continent-wide technical standards. Customers and users need to be able to anticipate the features of a product, service or technology, no matter where from. By enabling greater market reach, standards can be seen as a powerful means of increasing employment and improving the competitiveness of European business.

Moreover, since Europe does not exist in isolation, an emerging question concerns the recognition of European standards (defined in the framework of the European Standardisation system – ESS) alongside standards from around the world. It is vital that the ESS works as well as possible in order to ensure that European standards are seen as attractive, relevant and widely-adopted abroad to the greater benefit of EU business and consumers.

Beyond ESS, another increasingly efficient way to push for standardisation is through the use of Open Source Software, because it is developed through collaborative investigation, and because it can provide reference platforms and open application program interfaces (API). Yet, today, many Open Source foundations and initiatives are led from outside Europe: this is why active support and promotion of European open source could complement policy making towards standardisation.

Open source: 'Open source software' refers to a software that is collaboratively developed and promotes universal access to its source code: the associated "open source" licence grants permission to licencees to use, copy, modify and redistribute the software. Because of its "success", open source can be considered a key driver of innovation in ICT today.

With its collaborative nature and its contribution to non-proprietary software, open source software helps to ensure transparency and multi-sourcing interoperability. This is why open source software can be seen as a tool complementary to plain text standards.

Mobile telephony: can GSM's success be reproduced?

The GSM standard paved the way for European leadership in mobile communications for many years. The standard was first proposed by CEPT (a European body in charge of telecoms policy). Then, the recommendations developed at the political level within the EU and Member States, with agreements to pursue a common standard for the first digital replacements to original analogue mobile telephony networks. Eventually oversight of the standard was passed to ETSI.

GSM's history suggests two salient facts: first there was a technical advance within the EU capable of widespread exploitation and, secondly, industry was able to mobilise the necessary industrial and political co-operation to ensure its development. However, this success has not been maintained in later evolutions of mobile telephony, such as '4G'. There are hopes to replicate the GSM success with 5G, if the technology can prove widely-applicable and rally political and organisational support. The establishment of a sustainable co-operative model between the various vendors is also a major industrial and political challenge.

Protecting market from control by individual players

Standards, once an arena reserved for technical experts, are now a field with obvious social and political impact. The change stems from a growing awareness that technology is a key competitive asset for companies as well as for countries themselves, in their race for jobs and growth. In this context, standards can be used to secure and entrench, for better or worse, a particular technical approach to steer and influence the development of future generations of technology.

In practice, a technological 'lock-in' is achieved through the inclusion of favourable features - or already-owned technologies - into standards. Vendors who move first with an advance usually benefit from an 'installed base' of existing clients. These customers can become captive by specific vendors not only because these offer unique features in their services or devices, but also because the lack of interoperability prevents customers from switching to competition. Likewise, subsequent vendors face a difficult time regaining a technology edge as they need to maintain interoperability with the existing customers; they are thus dependent on dominant players, who may lock the market. In most cases, these leaders retain leadership, through 'proprietary extensions' or the ability to commoditise part of their product line to "kill" competition. This is why it is important to have interoperability integrated 'by design'.

Unfortunately in practice, full interoperability is seldom achieved, especially when facing *de facto* standards. As a result, markets often lack fluidity both from a consumer and industrial point of view. Faced with these realities, there should be a policy preference for the development of technology-neutral, *open* standards. These should be developed, approved and maintained via a collaborative and consensus-driven processes and result in interoperability and data-exchange among different products or services.

Overall, there should also be better awareness of potentially monopolistic behaviours by a few players in the standardisation process in some industrial consortia. This activity is a real concern for the telecoms industry, which has a long history of internationally standardised, open solutions since networks are meant to be robust, secure, technology-neutral and open for all connections and users. In this context, interoperability, achieved through market dominance (standard *de facto)* is not a sustainable response at industrial or political level.

A European vision for standards in the EU and the wider global scene

Standardisation is now a global process, involving different regions and numerous organisations with different philosophies. In this context, it may be difficult for Europe to:

- Promote its own political – if not technical - vision of "full" interoperability.
- Define standards to embody regional policies, when the wider world develops alternatives whose effect can thwart such policies by bypassing local regulatory frameworks.

This is why the role of Europe in regard to standards will be more effective if its efforts are guided along five directions:

- Work at political level and on the global scene, for a consensus-based vision of what interoperability of products and services should be. Political engagement is important at this stage to channel industrial inputs from various sectors and regions.
- Encourage initiatives to decrease the global fragmentation of standards, which tend to be developed in vertical silos or in the framework of competing industrial consortia. Some organisations such as ITU, 3GPP, and European organisations like ETSI, have a good track record of openness, transparency and inclusiveness.
- There should be an awareness of the risks of dominant or monopolistic behaviours. These behaviours can be embodied in standards that favour an industry or a category of players or that are developed without a wide consultation of stakeholders.
- European standards, developed within the ESS should be actively promoted. This can be done by recognising their role compared to technical specifications *developed outside* the ESS (recognised in EU through the Multi-Stakeholder Platform). Promotion of EU standards should also be part of bilateral or multi-lateral trade agreements, as European standards find themselves in a weaker position when it comes to markets outside of the EU territory.
- Support should be given to increase cooperation between European Open Source initiatives and Standardisation organisations, since Open Source is increasingly a factor in the development and adoption of standards. Cybersecurity and cloud software are a good examples of topics that can be addressed by the ESS and an open source policy working together

More recommendations for a standards-based DSM and an industrial renaissance in the EU

It is important that standards remain the creations *of industry, for the industry* while including a wide array of external stakeholders in their formulation phase. The DSM can be used to promote considerations such as:

Standardisation priorities for Europe, collaboratively defined by policy makers and stakeholders:

- Priorities for areas like 5G, Internet of Things, standardisation across industries (automotive, smart homes, etc); cybersecurity and encryption. Moreover, because mobile networks are a great asset for Europe, the focus should include cellular IoT and security with eSIM.
- It is important that the definition process is balanced. While the traditional way is to issue mandates to ESOs, standards from industry tend to be better adapted and implemented sooner. There should be a balance between mandates and initiatives from industry.

Recognition and promotion of European standards in the EU and beyond:

- For a better chance of success for European standards, the associated standardisation process should be given realistic and fair objectives, with a definition of lead organizations to avoid duplication of work.
- It is most important to have European standards enter into force once formulated. Legitimacy of ICT technical specifications can be grounded in references to rationales like health, safety and environmental impact.
- Active promotion of European Standards by EU institutions as well as by Member States can be done through promotional campaigns but also through their integration in public tenders and other references.
- While it is important to guarantee market openness thanks to the recognition of other regions' standards in the framework of world trade agreements, there needs to be a balanced approach that defends the value of mandated European standards.

DSM is a unique opportunity for a policy promoting full and open interoperability in standards applicable on the EU territory:

- Beyond products, interoperability is also important for ICT *services*, which are at the centre of the Single Market. Interoperability of standards and services should be relevant for operators as well as service providers and device manufacturers.
- In consideration of industrial stakes and for the sake of the ecosystem's vitality, there should be a special awareness around *open* and technology-neutral standards.

Standards tend to reflect the success of market players or their current products and technologies. Policy making in this area should ensure better protection of customers as well as support the openness of industrial markets – to guarantee market fluidity and growth of the ecosystem. In particular, policy governance should aim to prevent monopolistic trends propelled by a few companies or by a few standardisation consortia.

Orange and standards

With presence in 40 international organisations, Orange is one of the most active operators in standardisation. This activity stems from the awareness that many standards and organisations are directly relevant to Orange activities. With 200 representatives in these organisations, our aim is to promote interoperability and openness. We are *de facto* a leader in promoting new standards such as 4G, Fibre FTTx, Mobile Banking with NFC, HD Voice, Rich Communication Suite, Network Functions Virtualisation (NFV), Cloud computing as well as an active contributor in other domains like Software-Defined Networking (SDN), security, privacy and Big Data etc…

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