

SYNOPSIS REPORT ON THE PUBLIC CONSULTATION 'STANDARDS IN THE DIGITAL SINGLE MARKET: SETTING PRIORITIES AND ENSURING DELIVERY'

I. INTRODUCTION

This synopsis analyses the responses to the Commission's public consultation on ICT standardisation as part of the Digital Single Market strategy. It covers trends, sectorial and cross-sectorial issues, and potential actions for the Commission and stakeholders.

The analysis follows the structure of the questionnaire. The completion of each field was not mandatory. Most of the respondents responded only to the questions of their concerns. The conclusions are based on the number of answers relative to the respective questions, not to the total number of responses.

The public consultation sought feedback on the underlying problem analysis, and stakeholders' views on a possible future priority-setting policy on ICT standardisation. It covered key technology areas essential to the Digital Single Market including time-tables for the necessary standards development. It was open from 23 September 2015 until 4th January 2016.

Standards are important tools for making different technologies work together and for stimulating the growth of new eco-systems across a digital single market. They can boost innovation and reinforce the competitiveness of European industry.

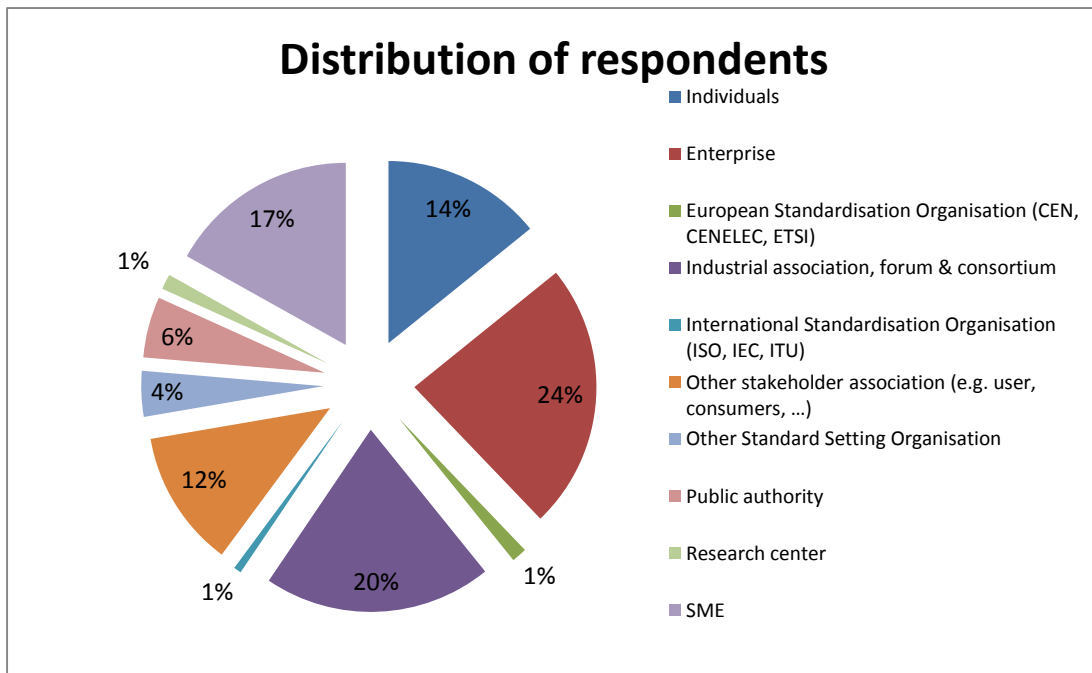
Overall, respondents supported the Commission's initial problem analysis on ICT standardisation, in particular the need to define clearer priorities for core ICT related technologies. The replies highlighted the importance of timely standard-setting processes that reflect the interests of European business, consumers and governments as much as possible amidst increased global competition. Respondents confirmed the need for improved ICT standardisation ecosystem to boost competitiveness, facilitate global market access and ensure products' seamless interaction in the digital single market. They pointed out that the presence of European experts in global standardisation needs to be strengthened. Some respondents proposed that other measures could be implemented such as the definition of a clear political framework for competition and interoperability for digital products and services, the establishment of objectives i.e. what standards should help to achieve or the support for SMEs and research centres to participate in standardisation.

According to respondents, ICT domains that require priority standard setting are Cybersecurity, the Internet of Things, Data, Cloud and 5G, and eHealth, Smart Energy, Smart Cities, Digitising of Industry, and Intelligent Transport Systems as the most relevant sectors. These recommendations to the Commission, along with the advice of the European Multi-Stakeholder Platform on ICT standardisation form the basis for Priority ICT standards Plan to be adopted by the Commission in April 2016.

II. OVERVIEW OF RESPONDENTS

The Commission received 168 replies:

- 156 online submissions via EU Survey
- 12 replies by email
- 147 responses came from representatives of an organisation/company/institution
- 21 from individuals in their personal capacity



Many participants are active in different standard-setting organisations at international, European, global, national and regional level. Most major international, European and regional standardisation bodies were represented in the replies. The majority of participants mentioned participation in other standardisation fora and consortia. That is confirmation that for ICT standardisation important standards are developed outside the formal standardisation bodies recognised in the EU regulation 1025/2012. The variation of person months devoted to standardisation related activities is high amongst the respondents:

- 3 respondents indicated over 1000 person months
- 4 respondents indicated between 100 and 1000 person months
- 18 respondents indicated less than 100 person months

Respondents mentioned that the industry put forward €1 billion for standardisation of the 4G telecommunication standard.

III. FRAMEWORK AND PROBLEM STATEMENT (Part II.1 Questionnaire)

Q1.1 Did respondents share the Commission's analysis?

The majority of the respondents shared the Commission's analysis on the Digital Single Market standards, and recognised the strategic role of defining priorities. Involving all interested stakeholders in the relevant eco-system/value chain i.e. from consumers to adopters of ICT solutions, SMEs, research, etc. in the standardisation process, and ensuring the global nature of the resulting standards are the key aspects that were pointed out. Several respondents considered that top-down prioritisation may be counter-productive and hinder development and innovation. A small number of respondents pointed to missing references to the emerging sharing economy or to the management of energy consumption of the digital technologies. Some respondents also suggested reusing communication technologies and ontologies across different sectors, rather than addressing standardisation by sector/domain.

Q1.2 Role of ICT standards for the economy in particular beyond the ICT sector

There was good consensus amongst the respondents that ICT standards play an important role for the economy beyond the ICT sector, and that all economic sectors could benefit from increased usage of ICT, and from solutions based on non-proprietary standards. A small number of respondents pointed to various domains in addition to the ones proposed such as energy provision systems, domotics, financial technologies, agricultural technology, 3D building models, rail supply industry, intermodal

and multimodal transportation, household appliances, content creation and distribution and book publishing.

Q1.3: Influence of priority-setting with time-tables at EU level

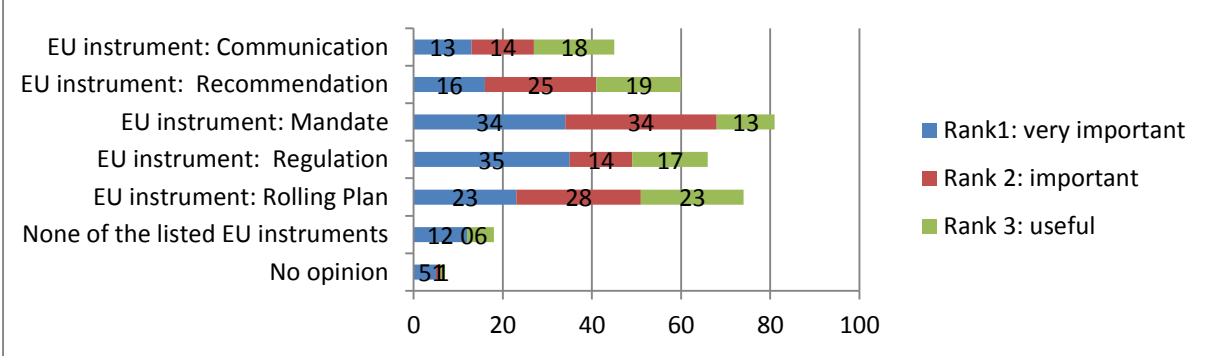
Respondents generally agreed that setting priorities for ICT standards at EU level with clear time-tables will help standard-setting organisations better organise their work and support the Digital Single Market. Some respondents mention that complementary measures can flank prioritisation such as defining a political and regulatory framework (for competition and interoperability in the various domains), of objectives that bring value to all stakeholders, and adequate to support to weaker players e.g. SMEs, research centres, consumers for their participation in the standardisation work.

Q1.4 How to gain broad support of key stakeholders

Many replies proposed steps to ensure the broad support of key stakeholders in the prioritisation of standards including:

- Seeking the early engagement of industry and of Standard Setting Organisations (SSOs) through targeted dialogue
- Support to industry-driven Public-Private Partnerships
- Create suitable bodies with the right mix of participants for the execution of specific standardisation activities.

Q1.5 Ranking the most effective instruments at EU level



Some respondents considered that voluntary adoption mechanisms of standards are less successful in achieving policy objectives. Many supported a regulatory approach complemented by issuing standardisation requests to the European Standardisation Organisations (ESOs). The importance of the Rolling Plan for ICT Standardisation established by the Commission expert group Multi-Stakeholder Platform was also mentioned.

Q1.6 The impact of standards prioritisation on Europe's global leadership

Overall respondents expressed the view that setting clearer priorities will have a positive impact on Europe's aspirations to leadership in global standard-setting because it will trigger more cooperation in Europe with a positive effect also on international standardisation. The plan will have to be focused and relevant to specific European needs, if it is to be effective. According to other views, leadership in global standard-setting results from industry and innovation leadership which should be the priority of public policy. Some respondents evoked the need to strengthen and financially support the participation of European experts in the international standardisation work, and ensure the uniform adoption of the resulting international standards in the Member States.

Q1.7 Ability of European companies to capture new market opportunities

A significant number of respondents believe that this initiative will increase European companies' ability to capture new global market opportunities. This view is not shared by some respondents who point to the influence of factors outside Europe such as legislation and diverging requirements. The role of the European Multi-stakeholder Platform on ICT standardisation (MSP) was emphasised as a tool to ensure the consistency and recognition of European standards at the global level. Opportunities

may be created by influencing the market through liaising between Public-Private Partnerships (PPP), relevant ESOs and – in the case of software platforms – the support to global open source initiatives. Several respondents highlighted the need for international acceptance of the priority plan, if it is to have an impact.

Q1.8 Other measures EU institutions could take

The replies contained numerous suggestions on complementary measures:

- Implementation of an appropriate regulatory framework to enforce the take-up of the priority standards
- Support to open-source communities and their integration in standardisation activities
- Greater support to start-ups and more involvement of societal stakeholders in European standardisation activities
- Defining a shared policy agenda with other global actors (ISO, ITU, IETF, W3C, etc.)
- Promoting administrative standards e.g. VAT systems for digital market, consumer protection practices, data protection measures
- Increase awareness of the Rolling Plan for ICT Standardisation

Q1.9 How can Standard Setting Organisations (SSOs) respond to a changing standardisation environment?

There are mixed views on how standard-setting organisations could best respond to the increasing speed of technological development and the integration of ICT technologies in business processes across industrial sectors. Some respondents believe that successful SSOs have created processes that continuously evaluate and maintain the relevance of their standards. Others recommend that SSOs develop more agile approaches to review the work-programmes of their Technical Bodies. The use of collaborative tools could speed up the standards adoption process. The patents strategy of key players was mentioned as a possible cause for slowing the standardisation process. The involvement of academia for linking innovative projects to standards development and the support to pre-standardisation research were mentioned as useful instruments in support of SSOs.

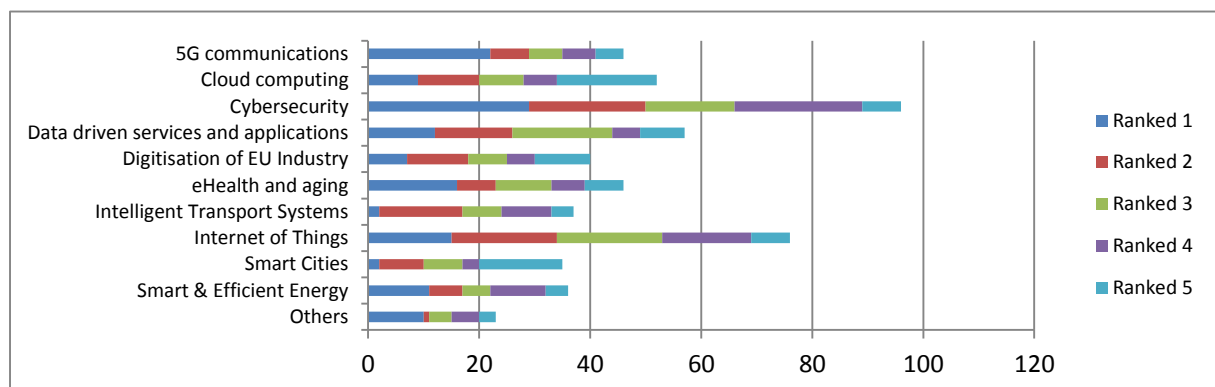
Q1.10 The involvement of EU experts in global and international SSOs

The participation of European experts in international ICT standardisation activities is generally considered important, even if views are mixed on the adequacy of the current involvement. Participation and the quality of contributions should be improved according to the majority of the expressed opinions. Many respondents underlined the need for EU or national financing to support the participation of European experts in the work of international SSOs.

IV. ANALYSIS OF THE PRIORITY DOMAINS FOR STANDARDISATION IN THE DIGITAL SINGLE MARKET (Part II.2 Questionnaire)

Ranking of the domains

Respondents selected the following priority domains:



The topic that prompted the most responses was cyber-security, followed by Internet of Things (IoT), Data-driven services and applications, cloud computing, eHealth and 5G. Few supplementary ICT domains were suggested such as media / publishing, digital financial services, eCommunication and other sub-domains.

1. 5G

5G is the next generation communication technology to enable ubiquitous connectivity in a world of permanently connected objects. 5G standardisation is important to support new services, applications, new business models benefiting the consumer and to speed up deployment in Europe.

Respondents consider that standardisation for architecture definition and new radio access technologies and waveforms, including backhaul/front haul integration are very important.

Standardisation needs/gaps include better linkage of spectrum allocation in the standardisation process, better integration of vertical industry sectors within the standardisation process, community building, open platform development, clear roadmaps with timelines and responsibilities, increased funding and support for participation in Standard Setting Organisation. Actions should concentrate on ongoing standardisation work in ETSI/3GPP and ITU-R. The linkage to open-source community is seen as vital for new services.

All actions are considered equally important, and a pro-investment regulatory framework is said to be needed. Amidst extensive 5G research and industry activities world-wide and as results are feeding into standardisation, it is essential that Europe dedicates enough resources to 5G standardisation and international coordination in order to secure the competitiveness of EU industry compared to the rest of the world.

The consultation confirmed that ETSI, 3GPP and ITU are driving the 5G standardisation landscape for global interoperability, whilst NGMN and GSMA are providing input to these organisations on requirements. International cooperation should further promote additional and homogeneous spectrum usage. Most respondents indicated that 5G standardisation is resource-intensive, and while they are willing to spend on standardisation, many ask for financial support.

2. Cloud computing

The consultation identifies 3 priority areas for cloud computing standards:

- Interoperability and application / data portability to avoid customer lock-in
- Trustworthy and secure cloud services based security policies and data protection
- As a service solutions (IaaS, PaaS, SaaS) based on standards particularly for cloud platforms

According to the replies, the wide use of standards in these areas will directly affect the development of the market. Respondents considered that the Digital Single Market and related EU policies are important particularly in the context of data protection and cross-border data flows. The responses indicate that there is a well-functioning standards development process for cloud computing and that the issue is more on the identification and wide take-up of existing standards. Strong community involvement is needed to develop good practice and implementation guidelines that facilitate the use of cloud standards by companies and public procurers. The development and uptake of cloud standards can be accelerated through R&I projects and by referencing cloud standards in public procurement.

3. Cyber security

Requirements for security and privacy "by design" are identified as priority. Security weaknesses or vulnerabilities within ICT products contribute to the overall cyber-security risk of a system. Respondents identified the need for processes that allow security researchers to disclose identified vulnerabilities to ICT service, system and product vendors as another way to reduce security vulnerabilities. The importance of encryption was highlighted, especially its role in supporting our fundamental rights of privacy and data protection.

Respondents highlight potentially overlapping activities in SSOs and global/European fora and consortia, and ask for better coordination. They perceive lack of implementation or correct application of existing standards. Respondents highlight the need for more R&D in cybersecurity standardisation to cope with the rapid pace of innovation in ICT products and services, increasing interconnectivity and dependence on ICT.

4. Data-driven services and applications

In the data-driven economy, increasing data interoperability (by standards) across national borders and industries is seen as an important goal. The availability of large quantities of (real-time) data and the ability to extract value out of it are considered crucial for the competitiveness of European industry.

The subdomain 'APIs for simplified data-sharing and reuse between data-driven services and applications' was selected most frequently, followed by 'Data related processes (such as data collection, data curation, data management)' and 'Data licensing conditions'. Some gaps or unaddressed needs respondents highlighted include entity identifiers, data models, data processes, the multilingual dimension in data, or the application of big data technologies on linked data.

Convergence can be observed in some replies on the following needs:

1. analysis of the existing standards landscape to identify gaps and possible actions for the future
2. the definition and promotion of use cases and guidance
3. the promotion of standardised APIs for data access

Some replies throughout the questionnaire indicate the need to promote and harmonize existing standards rather than create new ones. The EU instruments and actions were judged relevant for effective implementation, especially the support of research & innovation projects to contribute to standardisation.

5. Digitisation of European Industry

The consultation identifies 3 priorities for standards in this area:

1. Focus on models for different areas of digitisation of industry, terminology, reference architectures, use cases and interoperability profiles; common language for the development of large-scale platforms is important for many actors, including SMEs and new digital innovators
2. Human Machine Interfaces and Human Machine Interaction: standards in these areas will address the safety and health of humans interacting with machines e.g. for autonomous cars, robots collaborating with humans, etc.
3. Security - IT and information security - for preventing hacking of connected cars or for influencing the control of a digital factory. For 3D printing, some respondents say it is an important requirement that the product that is printed locally still has the same specifications as the product that was designed, and that nobody was able to change the data between design and production.

6. eHealth and aging

eHealth is dominated today by local/proprietary solutions. Standardisation can increase this market's commercial attractiveness while providing better care across borders. All selected areas for standards are considered as high priority for DSM and will support the free movement of people.

'Semantic interoperability of Electronic Health Records ' and 'Security and Safety of mHealth apps' were selected most frequently, followed by 'Interoperability profiles for mHealth apps', 'Telemedicine' and 'Drug identifiers for medical prescriptions'. In decreasing number of total mentions, interest was also expressed in the pre-defined subdomains 'Quality criteria for apps', 'ICT infrastructure for the implementation and delivery of services for independent living in age-friendly buildings', and 'Interoperability profiles for independent living'. According to the consultation, industry awareness for interoperable solutions is weak and their adoption by Member States and industry needs to be further incentivised. There is also a need to foster EU-wide adoption of coding systems, and reinforce electronic identification and authentication for cross-border healthcare.

All possible priority actions are judged important, with most support for supporting research and innovation projects to contribute to standardisation, followed by increased strategic coordination of ICT standardisation at EU level, consistent application of existing standards, SSOs cooperation, community-building, identification of ICT technical specifications, mandates and the potential creation of an eHealth Public Private Partnership. Stakeholders mainly asked to promote the adoption of existing eHealth standards and foster the integration of these standards in industry solutions. Activities should be carried out together with key stakeholders and active participants in the eHealth standardisation landscape.

7. Intelligent Transport Systems

Connected vehicles represent a key opportunity for the Digital Single Market, building on European strengths in automotive and communications, impacting other domains. Connected vehicles are expected to be a major generator of data, and a cornerstone of IoT services and applications. They depend on high levels of cybersecurity and connectivity. Connected and automated vehicle applications would render the European industry more competitive and would likely directly benefit consumers. They will deliver benefits in other EU policies: reduction of road casualties, mobility efficiency or environment (reducing energy consumption and emissions).

According to respondents, interoperability is key for ongoing and future developments (avoiding lock-in and turnkey solutions that render consumers captive and create industry silos). In order to reap the benefits of such systems (safety, mobility, sustainability, service generation) respondents stress fair access to in-vehicle data through standardised open platforms, to support a wide range of innovative and competitive services. 'Connected and/or automated driving', 'Connected vehicles applications' and 'Access to in-vehicle resources and data' are the sub-domains prioritised by the respondents. Preferred measures selected are mandates, SSO cooperation, increase strategic coordination of ICT and consistent application of standards, and support RTD for standardisation and community-building; in particular the Cooperative-ITS Platform activities should be further strengthened.

8. Internet of Things

Standard setting for Internet of Things has direct benefits for consumers, manufacturers and society. The timely availability of standards based on consensus was highlighted for reducing productivity costs, increasing market growth and benefiting consumers. Common interfaces will facilitate economies of scale, thus contributing to the functioning of the DSM.

The highest ranked sub-domains are Reference architectures and related standardised interfaces, Energy / Environment monitoring, Smart cities Building/Home automation, Advanced Manufacturing / M2M and medical health care systems. Respondents emphasised the need for reference architectures, and for contextual information access based on standardised open APIs. They also pointed out the definition of common semantics/ontologies besides the requirement to integrate legacy and vertical solutions. Interoperability at the application layer was seen to drive faster adoption due to greater compatibility between devices. The regulatory gap with respect to Data protection, data ownership, data use was recognised. Respondents marked all listed actions as important: 'SSOs cooperation', followed by 'supporting RTD for standardisation' and 'Consistent application of standards' are the top ranked actions. The AIOTI platform, ETSI (including oneM2M), ITU & ISO/IEC, IEEE (in particular IEEE P2413), IETF, W3C's The Web of Things, FIWARE standard (as part of FI-PPP), and several Industry fora and consortia were recognised for their IoT standardisation activities. The need for a Public Private Partnership implementation model was stressed.

9. Smart cities

Smart and digital city technologies are emerging with the promise of major innovation opportunities for Europe. Many *de facto* smart cities standards are already available. While European cities and companies are working in this field, developing common smart city standards that support European priorities is seen as critical. Respondents support standards as a way to ensure interoperability, avoid vendor / technology lock-in, create markets and spur growth and the competitiveness of the European industry. They see urgency to act on standardisation.

APIs for urban platforms followed by the urban platforms and the urban management system were seen as priority. Other sub-domains highlighted include common urban ontologies, transactions, and indicators. Horizontal technical domains such as 5G, IoT, (cyber) security, etc. are seen as fundamental technologies supporting the application layer. In particular, respondents supported open initiatives aimed at standardisation with support from the ESOs. All proposed actions are supported by the ranking led by the consistent application of standards. According to the consultation, the resulting standards should support a common framework within an international dimension. At the same time, the national SSOs are seen as an important engine for standards creation. Standards for public procurement were also highlighted as important.

10. Smart and efficient energy use

Digitisation of the energy industry is closely linked to the objectives of the Digital Single Market objectives. It is also an important factor in increasing competitiveness of European industry and achieving Europe's energy and climate targets.

Respondents highlighted smart grids and smart metering as the most important sub-domains, followed by energy efficiency indicators, building automation and smart appliances, electrical vehicles integration with smart grids, home management systems, as well as Building Information Modelling were also seen as sub-domains where priority standards would bring benefits.

Respondents underlined that a clear architectural frameworks based on open standards is needed for achieving critical mass and harmonisation across Member States. Wider adoption and alignment of standards across utilities in areas such as device management and application layer security, product and overall system level goals such as interoperability, robustness were also highlighted as important domains.

Respondents considered all the proposed actions important. Additionally, harmonisation between companies in the energy sector was indicated as key to achieving focus and market-size. The present divergence and fragmentation in the smart metering market was mentioned as an obstacle to sector transformation.

Besides ETSI/EE and ITU-T SG5 which already work with all stakeholders, three Dutch initiatives were mentioned: the Universal Smart Energy Framework, Flexiblepower Alliance Network and the Dutch Energy Atlas. Zigbee, DLMS, GBZ, ad-hoc Interoperability rules, XML were seen as part of the integrated solutions, but needed to adapt to emerging requirements and harmonisation across national, European and global markets.

11. Other Domains and other comments

A few respondents suggested additional domains such as media / publishing, digital financial services, eCommunication.

For the media and publishing sector, enhancing the adoption of standards and promoting interoperability in the digital publications market would support 'Better online access to digital goods and services', stimulate e-commerce and improve the portability of digital content. It was also said to help create 'an environment where digital networks and services can prosper', reducing technology lock-ins and improving inclusiveness. The adoption of standards and interoperable solutions in this market can address the needs of many stakeholders along the value chain, interested in an open market and level playing field for players of all sizes, be they publishers, booksellers or libraries.

Other actions proposed include the elaboration of guidelines for promotional purpose and to increase uptake of standardisation, identifying legal barriers, more support of skills & education in standardisation, and the definition of a fair IPR policy on standards essential patents.

Several respondents stress that standardisation is a bottom-up process led by industry with framework conditions set by regulators. The priorities for public action should aim to support private initiatives in the sectors, directly (via R&I projects) and indirectly (fostering cooperation, community-building, etc.). Respondents identified the need for a better mechanism to identify and adopt widely recognised

standards, hence the importance of accelerating the identification of ICT technical specifications and ensuring consistent application of existing standards.

Overall, respondents strongly support investing more resources to facilitate the participation of experts in standardisation activities. Several groups in particular SMEs indicated that effective participation in standardisation-setting required dedicated financial support.

V. The position of Specific Stakeholder Groups

1. Standard Setting Organisations (SSOs)

Eight SSOs responded to the consultations. The majority share the Commission's problem analysis, fully or in part. They highlighted the dominance of national standards in many sectors e.g. healthcare, the importance of Web standards and the blurring boundaries between European and global standards. There is strong consensus on the importance of ICT standards and its impact outside the domain, and good consensus that prioritisation is needed.

SSOs highlight the importance of community building, the early, regular, strategic and operational discussions between policy makers and standards organizations, recognition for the value of the Commission's expert group "Multi-stakeholder platform for ICT standardisation in advising on standardisation activities and policy support.

2. IT industry

The responses of the category enterprise, SME, individuals, research centre, industry association, forum and consortia were summarised under IT industry as no major difference could be observed for the following statements: Standardisation is a bottom-up process by industry in line with World Trade Organisation principles. The European standardisation system needs to adapt to the changing environment of the digital industry. Technology is a rapidly developing area, standardisation mitigate fragmentation and disparate technology uses across the EU. Timely processes, stakeholder involvement, cross-fertilisation of ICT technology, open platforms and consistent adoption and implementation of standards across Europe are important attributes for the IT industry.

3. Stakeholders associations (e.g. users, consumers, etc.)

End users agreed to have a well-defined framework for ICT standardisation with clear roadmaps and timelines, which is important for community-building, collaborative economy and new business models in an open and competitiveness market. The interoperability, user needs / usability, privacy, security, accessibility and a balance for quality versus speed are important elements to be addressed by the standardisation process.

4. Member States / EFTA countries:

Member States mostly support the Commission analysis, indicating the importance of standardisation for the completion of the Digital Single Market, and the need to develop a strategic approach to ICT standardisation. There is a need for an environment where standards can be effectively implemented and coordinated, providing leadership where necessary including as structure through which to create opportunities for European businesses to influence global standards. The Commission is well-placed to coordinate standard-setting by the various SSOs in Europe, identify priority areas for standardisation and stimulate cooperation. ICT standardisation should be market-driven and involve the relevant stakeholders. Respondents emphasised to reinforce the ESS and its position at international level, defend European interests, promote European standards and avoid overlaps.

VI. CONCLUSION

The consultation highlighted the following trends.

- Regarding the Commission's initial problem analysis on ICT standardisation, responses highlight the importance of promoting timely standard-setting processes that reflect European interests as much as possible. Stakeholders strongly support the need to define clear priorities to effectively organise

standardisation work. Respondents see the appropriate sequencing and timely availability of ICT standards as important for the effective functioning of the DSM.

- Stakeholders agree on improving the ICT standardisation ecosystem to boost competitiveness, facilitate global market access and ensure that products seamlessly interact in the DSM.
- The majority of respondents agreed on the setting of priorities as a way to pursue European leadership globally, and on the need to reinforce European presence in global standardisation.
- Some respondents proposed additional measures to be implemented such as the definition of a clear political framework for competition and interoperability for digital products and services, the establishment of objectives i.e. what standards should help to achieve or the support for SMEs and research centres to participate in standardisation.
- A majority of respondents supported the use of standardisation requests, the Rolling Plan for ICT Standardisation and regulatory measures as the most effective to complement the prioritisation and ensure its take-up by the standard-setting organisations (as illustrated in the diagram below).
- Respondents expect that Prioritisation of ICT Standardisation to positively affect Europe's effort to pursue leadership in global standard-setting and capture new global market opportunities.
- Respondents support all priority domains but gave highest emphasis to Cyber security, Internet of Things, Data, Cloud, eHealth and 5G.
- A few respondents suggested additional domains such as media / publishing, digital financial services, eCommunication and other sub-domains.
- Among the actions outlined for the different domains respondents proposed landscape and gap analysis, development of specific use cases and guidelines for wide promotion and uptake of standardisation, actions for supporting trust, security and privacy, identification of legal barriers, promotion of community building and pilot projects, facilitation of the cooperation between standards bodies, support of skills & education, fair IPR policy on standards essential patents, testing & interoperability, support of international dialogue, increasing the presence of EU experts in international & global standard-setting organisations, and support of open platforms for standardisation.

The results along with the advice of the European Multi-stakeholder Platform on ICT standardisation will feed into the elaboration of the Priority ICT standards Plan to be adopted by the Commission in April 2016.

VII. ANNEX

- List of questions in the public consultation.