

# **Facilitating Innovation: The Role Of Standards And Openness In The Broader Innovation Ecosystem**

**By Jochen Friedrich**

*Standards can play a key role in facilitating innovation. This is being taken into consideration by companies in their business strategies as well as by governments regarding their innovation strategies. Within Europe, detailed analysis has been taken regarding the complexities of the relationship between standardisation and innovation. Legal changes have been made adapting the European standardisation system to global realities in order to increase the potential in Europe for driving innovation via the powerful tool of standardisation. What is important is that the different roles which standards play in this context are well analysed and understood. Building on the boost of innovation which the internet and the world wide web produced, there is a huge potential for innovative technologies in the integration of technologies, in complex systems, in the areas that are usually tagged as “smart domains”. Like with the internet and the web, standards are a critical element in these context. And flexibility and differentiated action will be required for maximising the desired effects of innovation strategies and policies.*

## **Introduction**

Innovation has been identified as a key element for flourishing economies and societies. Innovation is key for business success.

Companies everywhere, large and small, are reviewing their processes as part of their transformations towards becoming better integrated and with the objective to foster innovation in order to increase their competitiveness. And innovation is high on the political agendas around the globe. Back in 2009, European Commission President Barroso gave directions for the Commission that took office in those days: "By the end of the Commission's next mandate, I want Europe to have become not just a 'knowledge society', but an 'innovation society.' I plan to make this one of my top personal priorities. Indeed, I want it to be an important part of my legacy."<sup>2</sup> Since then, governments and public authorities have started or continued developing innovation policies for supporting the ongoing and necessary social and economic transformation processes. For sure, the issue of promoting innovation will continue to be an important objective for the next Commission, as well, which will get into office in 2014. An important part of both business strategies and innovation policy activities is the relationship between innovation and standardisation and the impact standards and standardisation have on innovation.

Along the lines of such strategic considerations, this paper will examine the different levels of what seems to be a complex, perhaps even sometimes conflicting, relationship between standardisation and innovation. It will look at the different roles standards play in promoting innovation.

An important aspect in this respect is openness. Standardisation is *per se* a move towards openness, towards

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1. José Manuel Durão Barroso, President of the European Commission, Transforming the EU into an Innovation Society, Speech at the first European Innovation Summit, Brussels, 13 October, 2009, p. 4. at: <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/09/478&format=HTML&aged=0&language=EN&guiLanguage=fr>.

disseminating technologies and knowledge. Over the last two decades this has been complemented with trends in open innovation where businesses and governments open up their innovation processes allowing and often even inviting outside groups and communities to participate in the innovation cycles. What used to be internal and top secret has changed, has become an area for public involvement, interaction and common development. This has had its effect on standardisation, as well, most notably with the development and implementation of the concept of “Open Standards” which is part of an overall concept of “Open Platforms” and “Open Ecosystems”.

## **Innovation Is Key, Standards Are Key Facilitators**

Companies around the globe have put innovation into their focus. Innovation is critical for global competitiveness and business success. It is those companies that manage best their innovation processes and that are most ready to transform and adapt to a changing global environment which flourish and are well situated for competing on the global market.

Almost a decade ago, IBM undertook a survey amongst global CEOs on innovation.<sup>3</sup> For this survey interviews were held with “765 CEOs, business executives and public sector leaders from around the world”<sup>4</sup>. The title of the study, “expanding the innovation horizon”, is programmatic for its findings. The

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2. Expanding the Innovation Horizon: The Global CEO Study 2006, IBM Institute for Business Value. March 2006. See [http://www-935.ibm.com/services/au/bcs/html/bcs\\_ceostudy2006.html](http://www-935.ibm.com/services/au/bcs/html/bcs_ceostudy2006.html)

4 Expanding the Innovation Horizon, p. 5.

significant changes with progressing globalisation and an increasing degree of global integration of networked economies, has over the last decade, increased the competitive pressure on companies. Therefore, new ways of working, new ways of positioning oneself, new ways of operating, new products, technologies and services etc. need to be found, need to be developed. And they can be developed by actively driving the transformation of becoming a business that is fit to play within the changing and challenging global ecosystem. Yet, what is needed for making the transformation successful is constant innovation on all levels:

“Business model innovation matters. Competitive pressures have pushed business model innovation much higher than expected on CEOs’ priority lists. But its importance does not negate the need to focus on products, services and markets, as well as operational innovation.”<sup>5</sup>

In other words, innovation is not a single task of getting new technologies out, new, cool features implemented in products. It is much more: it is looking at all levels of operation. And it is above all in the integration of technologies to achieve an optimisation of processes, increase knowledge about the interrelation of processes and tasks, and about providing added value on top of already implemented structures and processes. This is what is behind “smart” or “intelligent” solutions. Smart city, smart grid, intelligent water management, intelligent transport systems – what this actually means is to be innovative by transforming existing processes adding layers and elements of intelligence in order to optimise, gain efficiency, reduce waste.

Standardisation plays a key role in these transformation processes promoting and enabling innovation on the various levels

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5 Expanding the Innovation Horizon, p. 4.

and especially regarding the integration of technologies. By providing open information about formats, protocols, APIs, etc. standards allow the combination of technologies and the incremental addition of new, innovative technology modules into existing architectures, e.g. under the paradigm of service oriented architectures (SOA) or with a perspective of cloud technologies also with respect to Software as a Service (SaaS), Infrastructure as a Service (IaaS) or Platform as a Service (PaaS) etc.

Cloud technologies as such strongly rely on open standards and the integration of technologies. Standards provide a trusted base for the use and implementation of technologies, enable and ensure interoperability and portability, prevent vendor lock-in and ensure implementability in open source:

“[...] if moving to the cloud locks the organization to a particular cloud service provider, the organization will be at the mercy of the service level and pricing policies of that provider. With that in mind, portability and interoperability become crucial to providing the freedom to work with multiple cloud providers.

“Interoperability is concerned with the ability of systems to communicate. In the world of cloud computing, this means the ability to write code that works with more than one cloud provider simultaneously, regardless of the differences between the providers. On the other hand, portability is the ability to run components or systems written for one environment in another environment.”<sup>6</sup>

In this respect, standards fulfil a critical function regarding the acceptability and adoption of new and innovative technologies like the Cloud. Companies, acting as customers, see these aspects

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6 Moving to the Cloud: A white paper produced by the Cloud Computing Use Cases Discussion Group, Version 1.0, 28 February 2011, pp. 7-8 (Available at <http://www.cloudstandardscustomercouncil.org/whitepaper-movingtothecloud.htm>).

and therefore request the use of standards. This increases choice and flexibility – and leaves room for new innovative offerings to be taken up more rapidly and without high exit costs at any given point in time in the future. In the same way the use of standards triggers innovation because technology and service providers have an opportunity to offer and provide innovative new technologies to any customer due to the ability to integrate these solutions with reduced efforts due to the use of standards based infrastructures.

## **Innovation At The Core Of EU Standards Policy**

On the political level in Europe the relation between standardisation and innovation and the positive effects of standards for promoting innovation have been analysed and addressed by the European Commission, the Council and the European Parliament at various instances and with some special focus since the mid of the last decade.<sup>7</sup> As a result, the topic of standardisation has been raised at prominent level in the various flagship initiatives of the current Commission and has become part of the Commission's Europe 2020 strategy. So, for example, the Innovation Union Flagship Initiative clearly states: “Standards play an important role for innovation. By codifying information on the state of the art of a particular technology, they enable dissemination of knowledge, interoperability between new

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7 A little overview of the discussion up until mid 2008 is given in: Towards an increased contribution from standardisation to innovation in Europe, Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2008) 133, pp. 1-2 (Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0133:FIN:en:PDF>).

products and services and provide a platform for further innovation.”<sup>8</sup> Not only does that stress the importance of standards in relation to innovation and innovation policy, it also indicates a number of different effects standards may have: codifying state-of-the-art, disseminating knowledge, facilitating interoperability and providing a platform for further innovation. This builds on what the Commission had explicitly addressed in the Communication on Standardisation and Innovation from 2008:

“dynamic standardisation is an important enabler of innovation. This occurs in different ways:

(a) Standards that express the state of the art give innovators a level playing field facilitating interoperability and competition between new and already existing products, services and processes. Standards provide customers with trust in the safety and performance of new products and allow differentiation of products through reference to standardised methods;

(b) The development of new standards is also necessary to accompany the emergence of new markets and the introduction of complex systems, such as the expansion of the Internet;

(c) The use of standards contributes to diffusing knowledge and facilitating the application of technology; this may then trigger innovation, in particular non-technological innovation in the service sector.”<sup>9</sup>

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8 Europe 2020 Flagship Initiative Innovation Union, Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2010) 546, p. 16 (Available at [http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication\\_en.pdf#view=fit&pagemode=none](http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf#view=fit&pagemode=none)).

9 Towards an increased contribution from standardisation to innovation in Europe, p. 3.

This analysis, among other aspects, differentiates between the use of standards on the one hand and the development of standards on the other. Or, in other words, the codifying and dissemination of knowledge and technologies on the one hand and the use, implementation and platform-creation on the other hand.

Looking at Information and Communication Technologies (ICT) the Commission addressed the relation of standards and innovation in much detail, most notably in the Digital Agenda for Europe (DAE)<sup>10</sup> and in the Communication on European Standardisation.<sup>11</sup> The special role of global ICT technologies is also recognised in the Regulation on European Standardisation (1025/2012).<sup>12</sup> Acknowledging positive effects of ICT standards for innovation the Commission has looked at the framework conditions for making these standards available for use and implementation in EU policies and in public procurement. While the European standardisation system is built on the three formally recognised European Standards Organisations (ESOs) CEN, CENELEC and ETSI, a large number of the most relevant global

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10 A Digital Agenda for Europe: Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2009) 245 (Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0245R%2801%29:EN:NOT>).

11 A strategic vision for European standards: Moving forward to enhance and accelerate the sustainable growth of the European economy by 2020, Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2011) 311 (Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0311:FIN:EN:PDF>)

12 Regulation of the European Parliament and of the Council on European Standardisation, 1025/2012 (Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF>).

standards and specifications in ICT is developed in global fora and consortia like W3C, OASIS or the IETF. The Commission identified the issue that the standards and specifications from such organisations have not been available for direct referencing in EU policies and public procurement. The Regulation contains a process to complement the European standardisation system by identifying standards and specifications from fora and consortia so that they can be used in public procurement, provided that they meet a distinct set of criteria listed in Annex II of the Regulation. These criteria include openness, transparency, balance, etc. In effect, this new process forms a necessary basis for a more effective innovation policy and for improved conditions in public procurement. It is, as it were, a precondition for the overall direction for policy making in Europe in the area of ICT:

“Europe does not yet reap the maximum benefit from interoperability. Weaknesses in standard-setting, public procurement and coordination between public authorities prevent digital services and devices used by Europeans from working together as well as they should. The Digital Agenda can only take off if its different parts and applications are interoperable and based on standards and open platforms.”<sup>13</sup>

Following this analysis from the Digital Agenda the Commission explicitly stresses the need of global standards and specifications from fora and consortia in the context of innovation policy in the Communication “A strategic vision for European standards” - not in conflict, but complementary to European standards developed by the ESOs:

*“In the new global era, the policy role of standardisation process cannot be limited to supporting European legislation. Today, standardisation is*

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13 Digital Agenda, p. 5.

*increasingly happening at global level in many areas, often, like in the field of ICT, through dynamic and fast-paced fora and consortia. In this context, the strategic use of standards on the one hand and European standardisation on the other, are strategic assets for securing EU competitiveness and a key tool for knowledge dissemination, interoperability, validation of novel ideas and promotion of innovation.*"<sup>14</sup>

In summary, the European Commission has developed a rather holistic view on the relation of standardisation and innovation. This ranges from the analysis of the interrelationship and of the roles standards play in supporting innovation to the concrete proposals for legal changes so that the European standardisation system is better suited to support policy makers as well as all stakeholders regarding innovation processes and policies. This has been done in close cooperation with the Council. Moreover, the new Regulation also accommodates some of the requirements voiced by the European Parliament already in its 2010 report on the Future of European Standardisation – namely that the revision of the European standardisation system must contribute to innovation and that for ICT specific changes are required for making global ICT standards and specifications available for implementation and use in EU policies and public procurement.<sup>15</sup> The actions taken and the legal proposals provided by the Commission are intended to support the creation of an innovation-

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14 A strategic vision for European standards, p. 4.

15 European Parliament resolution of 21 October 2010 on the future of European standardisation (2010/2051(INI)), recommendations 3-8 (Available at <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P7-TA-2010-0384&language=EN>).

friendly ecosystem in Europe and putting the European public sector on the forefront.

In addition, with the implementation of the EU ICT Multi-Stakeholder Platform (MSP) as the central advisory body to the European Commission on all matters relating ICT standardisation the Commission ensures a high level of information exchange and information flow.<sup>16</sup> All major stakeholders in European ICT standardisation are part of the MSP. This has global impact on driving new topic areas that are relevant for innovation and growth and where ICT standards play in role in supporting innovation policy. On the level of detailed planning the Commission works closely with the MSP on developing the EU Rolling Plan for ICT Standardisation which contains all major areas of activity including a listing of ongoing work on the global level and of concreted actions.<sup>17</sup>

## **Basic Levels Regarding The Role Of Standards In Relation To Innovation**

There is no such thing like one stringent causation on how standards promote innovation. Much rather, standards can have different positive effects promoting innovation in different contexts. It is an inter-relation with some level of complexity, depending on the technology domain and on the role which standards play. Therefore, there may well be different

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16 Decision 2011/C 349/04 of the European Commission:  
<http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2758>

17 EU Rolling Plan on ICT Standardisation: [http://ec.europa.eu/enterprise/sectors/ict/standards/work-programme/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/ict/standards/work-programme/index_en.htm)

requirements for an effective innovation policy which intends to leverage the positive effects of standardisation.

Standards are a vital tool for disseminating new technologies: For bringing a new, innovative technology to the market, preferably the global market, standards are a key facilitator. They make technologies available and promote their uptake. This has always been one of the elementary benefits of standards. Standardisation in this sense is the “second step” to market success complementing the innovation process in base technology and product development. Standardisation here is a tool based on a clear business decision to achieve business success on the global market. This can also be very effective for the transfer of research results into innovative new products and offerings on the market.

Standards facilitate market access in regulatory domains: Standards are an effective tool for complying with regulatory requirements and thus for enabling access to markets. This concerns for instance the areas of health and safety where governments have specific requirements that need to be met by standards. Ideally, and in accordance with the WTO TBT Agreement, global standards should be applied and regional or national barriers to trade need to be avoided. This promotes innovations on a global scale and for global markets. And it allows a fast and unencumbered access of innovative technologies and offerings globally.

Standards ensure interoperability: By openly describing interfaces, protocols, formats, etc. standards provide all necessary information for accessing coded content and for connecting technologies. Interoperability is a critical element of modern, state-of-the-art, open ICT architectures and infrastructures. Interoperability allows for a modular infrastructure design and is at the core of Service Oriented Architectures (SOA). It increases flexibility and choice, helps to avoid lock-in and reduces exit cost

for technologies. In this respect, standards and interoperability open the way for innovative products and technologies to be offered in competitive situations where replacement of older or less innovative technologies can fairly easily be done. Lock-in situations are avoided and vendors have a fair and equal chance for competing.

Standard provide a trusted and solid technology base for innovation to take place on the level of the implementation of standards: Given the benefits of interoperability and the opportunities for competing with other vendors standards encourage innovators to develop new, innovative products and offerings while implementing the respective standard. This means the differentiation with other vendors' products and offerings takes place on the level of the implementation. The standard, however, ensures that the innovations can be brought to the marketplace.

Standards facilitate the integration of technologies into innovative systems: A large potential for innovation today is in the integration of processes and technologies which is made possible via combining different standards. This applies to many areas and sectors. For example, companies increase their level of process integration and of automatic processing of data and transactions. Similarly, communication between parties is integrated – on all levels, be it B2B, B2C, A2A, A2B, A2C etc. Moreover, systems and processes can be optimised via the innovative integration of technologies. This can be seen in almost all areas and sectors, be it eGovernment, eHealth, smart grid, intelligent transportation, eMobility etc. Where ICT are used to optimise things and create smarter systems standards play a key role as enabler of such innovation.

Standards allow access to coded information for innovative add-on solutions: Not only the integration of technologies is

important for creating innovative, smart solutions, but also the ability to make use of information that is coded so that this information can be analysed and optimisation choices can be made. Standards ensure open access to such information by providing descriptions of the respective data structures, formats, protocols, APIs, etc. This makes it possible for innovators to develop new technologies that, for instance, add a new level of intelligent layer providing added-value for systems management and for smarter ways of optimising and doing the things that are done. Again, examples are manifold, be it smart water supply, smart home, smart cities, or the vast field of public sector information (PSI) where public data available in open formats based on standards is used in highly innovative ways leading to new insight and improvements and providing a base for new businesses and growth.

## **Strategic Considerations Regarding The Relation Of Standardisation And Innovation**

Any strategy regarding standardisation and innovation will take these different roles standards play in enabling innovation into account. And policy makers will look at means how they can best provide the framework for allowing a differentiated approach towards exploiting the full potential of standards in the context of innovation policy. A key criterion here is the analysis where the “innovative act” takes place and what its relation is towards the standard.

As we have seen standards can play a key role in disseminating technologies and bringing innovations to the

marketplace. The innovative act happened first, way before the standardisation activity, with the development or invention of new technologies or techniques. The transfer of technologies into standardisation usually takes place on the basis of a clear business case. Considerations in this context include whether the opening up of technologies in the process of standardisation will allow for some rewarding of the research activities and efforts spent on developing and inventing the new technologies. The market has developed a patent system and a patent licensing system. Standards bodies have implemented policies on how intellectual property rights (IPR) are handled. Licensing on “Fair, Reasonable And Non-Discriminatory” (FRAND) terms and conditions is the common practice which has also been accepted by public authorities as a minimum framework condition for standards to be supplied and used in policies and public procurement in general.

On the other hand, standards can play a key role in providing a platform, a common, agreed basis on which innovation can take place. Examples we discussed are innovation on the level of the implementation of a standard, integration of technologies, access to coded information, etc. In such instances the innovative act takes place using the standards that are available and implemented while interoperability ensured by standards is the key driver for such innovations. In other words, this is not about turning inventions, innovative technologies into a standard, it is about using a standard for developing innovative techniques, technologies and solutions.

What is highly relevant here is the unencumbered availability and broad adoption of the standard. This is where Open Standards play an important role. There are different levels of openness and a number of different definitions exist about what constitutes an

“Open Standard”.<sup>18</sup> Most violently the debate has been held on the requirements regarding licensing terms and conditions and to what extent a standard that is available under FRAND terms and conditions is actually an Open Standard. It is fair to say, however, that the more common usage of the term Open Standard implies that IPRs in the standard are available Royalty-free. In this sense the term Open Standard had been used in the European Interoperability Framework and had been adopted by several governments in Europe and around the globe.

## **The Role Of Open Standards In Enabling Software Interoperability And Driving Innovation**

Over the last 10 to 15 years openness has become the leading paradigm for economies and societies. And innovation that builds on openness can be seen on all levels – the public sphere as well as in business. Crowd sourcing and community-based work have become common ways introducing open innovation mechanisms which complement the traditional structures in industry. A new equilibrium between proprietary and open has established and is challenging companies of all sectors and in all geographies. The concept of Open Standards can be seen as an integral part in this overall trend and move.

Open Standards play a critical role in software interoperability. They have major benefits in this context: (i) Open Standards are available for everyone for free, without encumbrances on their use and implementation. This way they

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18 For a first and rough overview see the Wikipedia entry on Open Standard: [http://en.wikipedia.org/wiki/Open\\_standard](http://en.wikipedia.org/wiki/Open_standard).

promote interoperability on the broad scale and ensure that technologies can be integrated, innovative new products and technologies can be added into open architectures and platforms, etc. And (ii), Open Standards can be implemented in open source and therefore allow for a level playing field regarding proprietary versus open source offerings. Open Standards are also essential if open source technologies are to be combined and integrated into infrastructures.

Open Standards for software interoperability have rightly been made a requirement by a number of countries and public administrations. Open Standards ensure open platforms where also open source communities can contribute. Similarly open data that is available in formats based on Open Standards can be used and exploited by everyone without constraints and to the benefit of the public.

The prime example for how Open Standards can boost innovation are the internet and the world wide web. These Open Standards, developed within then new platforms like the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C) have been available for free for everyone to use and implement. With the standards like TCP/IP, http, html etc. and the establishment of the world wide web there was a base available, agreed and globally implemented, which enabled and fostered innovation in an unprecedented way. The standards guarantee connectivity and interoperability in an open infrastructure. No constraints, no royalty fees to pay. This has become an open road for innovation. And a major driver for growth – both on the global scale but also regarding the many small and medium sized enterprises everywhere that prosper because of the internet and because of implementing the standards. Included are web hosting shops, web design shops, web shops themselves, etc. Open Standards are at the core of this.

They promoted the biggest boost in innovation we have seen in the last decades.

What can be seen today is that for this decade up until 2020 an enormous potential for innovation lies in the integration of technologies. And ICT technologies are at the core of these innovations.

The integration of technologies and the use of ICT in complex systems is paramount in the context of solutions for a smarter planet. Innovation here is already taking place by delivering intelligent infrastructures that are highly efficient and overlay the physical infrastructure with digital intelligence. Innovations occur in the development of intelligent systems that use open standards to provide near real-time information for more efficient management of the infrastructure, e.g. in the context of water quantities, or, even, entire transportation systems. Smart metering or smart Grid is another example here. And for sure the Cloud is taking a leading role in driving innovation and further transforming economies and societies.

## **Further Building And Strengthening An Innovation-Friendly Ecosystem**

The European Commission has largely addressed the issue of innovation and the role standards play as an enabler for innovative technologies. Openness and Information and Communication Technologies (ICT) are major drivers in this respect. As President Barroso had outlined, “the application of innovations like Web 2.0 to business and public life is changing the way in which innovation happens. It is becoming more open and collaborative. Once the preserve of a select elite, it now involves a much wider range of actors. [...] crowd-sourcing and co-creation are now the

order of the day! We need a new policy that reflects these changes. This means that we will have to, well, innovate!”<sup>19</sup> The Digital Agenda has driven the European priorities in this respect with a number of focussed action items and areas that are being addressed. The new Commission coming into place in 2014 will certainly continue along this successful path.

The Commission follows a holistic approach with an analysis of the complexities in the relation between standardisation and innovation and with a legal proposal to adapt the basic structure of European standardisation to global trends and realities especially in the ICT sector. This will further strengthen the potential of standardisation in Europe to facilitate and even drive innovation.

On the further level of implementation a differentiated approach towards standardisation and innovation is required. The different roles standards can play in promoting innovation need to be taken into consideration both in business strategies and on the policy level in innovation and industrial policy. In this respect, industry should continue working with a clear commitment to standards and standardisation. This includes a commitment to contribute to standardisation, take technical leadership in standards bodies and to be willing to license technologies so that they can be used in standardisation. At any rate, the process of transformation for coping in the new paradigm of openness will continue, if not increase in intensity, and industry will further be challenged to find a new balance between proprietary and open.

Public authorities can make use of their powers by putting a strong focus on the potential for innovation that lies in the integration of technologies and standards. Also, public authorities should more stringently reference standards in public

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<sup>19</sup> Barroso, President of the European Commission, Transforming the EU into an Innovation Society, p. 4.

procurement. Open Standards should explicitly be required in public policies and in procurement where software interoperability is concerned.

Finally, standardisation needs strong and vital platforms, the standards bodies. They also need to move on with providing a flexible environment that is able to support innovation in all its aspects. In particular they need to be able to support the different roles standards can play in enabling and driving innovation. This might require the implementation of more dynamic or flexible rules and structures. Standards bodies will need to look whether the policies and processes in place are suitable also for open innovation in standards development. And they should be open to learn from each other – including best practices as applied in global fora and consortia.

Standards are not per se a guarantee that innovation will happen. But they can be effective tool to promote and even drive innovation. This decade will see a high potential in this respect, especially where the integration of technologies and thus the combination of standards are concerned. Proper strategies for standardisation that take into account the different roles standards play in promoting innovation will be required for maximising the benefits of the complex relation between standardisation and innovation.

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