Strengthening the multilateral trading system

Standards, Innovation and their Role in the Context of the World Trade Organization
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1. Introduction

(TBT) Agreement does not take into account the ubiquitous open standards that have been produced and the underlying technology platforms that have been developed by a priori globally open communities outside the traditional nation-centric standards system and related processes. These communities are grounded in universal openness, leverage and build upon knowledge for innovation and produce standards in a process that is open to the society of world experts without territorial restriction. This reality cannot be ignored anymore, since these standards provide great value through removal of barriers and promotion of innovation, interoperability, global trade and chances for development. By failing to acknowledge the nature and existence of the a priori globally open standards development ecosystem, with its associated inclusivity (of participants and standards bodies) and dynamism, the current WTO concept of standards and standardization limits interoperability, innovation and potential global economic growth.

Moreover, standardization processes that are universally open and transparent from the very beginning (and thus, less prone to manipulation) can help reestablish the shaken trust to the system (see recent revelations about manipulation of encryption standards in the national phase and how they are subsequently exported globally through the ISO stamp).

Against this background, this think piece discusses the role of standards in the WTO context, including their impact on innovation. It argues the need for the WTO to update its concepts and definitions of standards, and the underlying processes, to the 21st century reality so as to encompass more inclusiveness and openness in an era of global challenges that require increased innovation.

2. State of Play

Globalization is generally acknowledged as a quasi-automatic “megatrend” that will shape the world in coming years. It is regarded as a kind of natural force that will sustain world economic growth, raise world living standards and deepen global interdependence. At the same time, globalization creates economic, social and environmental challenges that may undermine its future, if not addressed in a collaborative way (Box, 2009). Only focusing on competition, and with a lack of collaboration strategies and frameworks, the benefits of globalization will systematically accrue to those countries that already have a competitive edge and can best access and adopt new technologies, including the capacity to shape and control strategic standards. This is not a sustainable long-term development as it will create a systemic level of global economic inequity.

The WTO itself notes in the World Trade Report 2012 that “the drivers of change are many, including greater interdependency in a globalizing world, increased social awareness, and growing concerns regarding health, safety, and environmental quality. Many of these factors call for a deepening of integration, wresting attention away from more traditional and shallower forms of cooperation” (WTO 2012). These drivers and their trajectories and intersections also are present in standards development fora. Just as the rise in global production and innovation chains may create new forms of policy spillovers that require direct cooperation on non-tariff measures, the standards ecosystem, will require global cooperation and collaboration and the recognition of global open standards and the processes in which they are developed.

Dated WTO concept of standards

The WTO concept of standards as captured in the TBT Agreement was founded in a pre-globalization

1 Nation-centric being territorially or state defined in the world political system, providing framework for political, economic, social and cultural activities of domestic actors, pursuing national interests in order to promote the welfare of their population.
2 Refers to revelations from Edward Snowden’s disclosure of U.S. National Security Agency (NSA) internal memos and subsequent reports that indicate an encryption standard adopted by the U.S. National Institute of Standards and Technology (NIST) was compromised. The standard was adopted by the International Organization for Standardization.
4 The WTO TBT in Annex 1 defines a standard as a “document approved by a recognized body that provides, for common and respected use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is not mandatory. It may also include or deal with exclusively with terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process or production method.”
The Uruguay Round was the 8th round of multilateral trade negotiations (MTN) conducted within the framework of the General Agreement on Tariffs and Trade (GATT), spanning from 1986 to 1994. The Round led to the creation of the World Trade Organization. The Round came into effect in 1995 with deadlines ending in 2000 (2004 in the case of developing country contracting parties) under the administrative direction of the newly created World Trade Organization (WTO).

Because of this legacy, the WTO concept of standards addresses mainly the negative, with an emphasis on barriers to trade facets, as noted in Annex 3 Code of Good Practice for the Preparation, Adoption and Application of Standards of the Agreement, “The standardizing body shall ensure that standards are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade.” Further, the WTO concept of standards is based exclusively on a standards development paradigm embodied by such standards organizations as the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU) and their underlying national representation model. It essentially means “first consensus by and within a national body, then geopolitical export.”

Via the Code of Good Practice, the Agreement encourages WTO Members to base their standards on international standards, guides or recommendations where they exist and to harmonize to avoid emergence of unnecessary layers of technical requirements. It encourages WTO Members to use standards developed with the approval of the international community. International community is defined by the construct of a nation-centric standardization model and system (of member states or countries). It however fails to recognize the increasing global nature of standards and to capture the emergence of global collaboration platforms in the field of standardization and their huge impact on innovation and trade. It has a particularly negative impact on broad collaboration in the decisive early phase of standards development, as actors that are needed to address the impacts of globalization and global technical expertise are excluded, jeopardizing thus standards setting as an innovation promoting system and impacting interoperability. This blind spot impedes the direct recognition of associated contributions and standards, and the opportunities of cross-national/regional communities of technical experts to cooperate and exchange information that can foster innovation at a global scale, and must be addressed if we seek to advance innovation and open markets. Maintaining the old logic means forcing future standardization activities into a dated regime.

Open Standards: Core to Unbounded Market and Trade Growth and Success through Innovation

Generally, key actors in innovation systems (e.g., companies, research bodies, knowledge institutions, academia and standards developing communities) influence knowledge generation, diffusion and use, and shape national and global innovation capacity (Box 2009). These actors and systems need unencumbered access to and participation in open, voluntary standards—outside the potential constraints of the narrowly defined paradigm for first national, then international standards. As the global community strives to keep pace with technology expansion and to anticipate the technological, societal and cultural implications of this expansion, and as it faces the increasing interference of technology with economic, political and policy drivers, embracing a bottom-up, market driven and globally open and inclusive standards development paradigm will help ensure strong integration, interoperability and increased synergies along the innovation chain across national and regional boundaries. Working within a framework of open participation and diversity, this paradigm espouses competition

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6 WTO TBT Article 1 General Provision.

7 Full text of the Code, see: http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm#annexill.
and in the same time collaboration among stakeholders to drive innovation and global market advancement.

The globally open standards approach has demonstrated agility, as witnessed in the development and deployment of the collection of standards for the Internet, is driven by technical merit, and harnesses global creativity and expertise through bottom-up collaboration. The approach results in the advancement of cutting-edge technology and empowers the rapid economic implementation of high-value, high-demand products and services with societal benefits. It drives technical innovation via processes that ensure direct, open participation, and which embrace different perspectives and interests to reach common goals. It produces standards developed according to accepted WTO principles, without borders and without limits to ensure a better future for all.

Global open standards also help ensure interoperability by enabling cross-boundary information sharing and transfer. For example, interoperability plays a key role across a diverse collection of ICT applications, including mobile communications, web services, e-commerce, e-health and smart energy. Interoperability promotes innovation via a meaningful exchange of information. Increased levels of ICT interoperability among systems, applications and components tend to be good for innovation, competition, and economic growth. Increased ICT interoperability fosters innovation in goods and services as well as processes, which in turn leads to technological advantage (Gasser and Palfrey).

Working within a set of principles that:

- advocates global cooperation and openness

- provides for global interoperability and the building blocks for further innovation

- contributes to the creation of global benefit for humanity

is core to unbounded market and trade growth and success through innovation.

The Internet: An Open Paradigm Example

The development and evolution of technologies upon which the Internet is based exemplifies the success of this bottom up, globally open, market driven system of standardization. The Internet evolved from a networking community to a global collection of communities and widespread information infrastructure that has resulted in today’s e-commerce, information sharing and community operations. The standards upon which the Internet was built, and continues to evolve upon and advance, were developed within a globally open, inclusive and decentralized model that allows for diversity of opinions and approaches as well as flexibility to acknowledge and address change and varying needs, opening the door to innovation by leveraging and expanding upon knowledge. Cross-organizational coordination and collaboration between IEEE, the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C) underpin the process of developing these standards. They collectively represent a suite of standards that form the foundation for the Internet and are being developed with a focus toward technical excellence. They are deployed through collaboration of many participants from all around the world. Together, they have been a key facilitator for the growth of a global economic and social model that has touched billions of lives. As of June 2013, the Internet has 2.75 billion users worldwide, nearly 40% of the world’s population. Recent reports place the Internet economy at 4.1% of the GDP for G-20 countries in 2011, accounting for 21% of GDP growth for the past five years (ITU, 2013; DiGrande, Field, Lundmark, O’Day, Pineda, and Dean, 2012; Manyika and Roxburgh, 2011).

The standardization paradigm that enabled the success of the Internet provides for involvement of participants from all around the world, outside of the limitations of nation-centric processes. It addresses efficiently the challenges associated with increasing growth of a global marketplace, including the role that standards play in international trade and the inherent unpredictability of converging and emerging technologies on a global scale (Housely & Mills,
This distinct standardization paradigm, captured as OpenStand, has a voluntary, bottom up nature, is decentralized, pluralistic and industry-led. It aligns with the six principles of the WTO’s TBT Committee adoption of a Decision on Principles for the Development of International Standards, Guides and Recommendation, and demands:

Respectful cooperation between standards organizations, whereby each respects the autonomy, integrity, processes and intellectual property rules of the others.

Adherence to the fundamental parameters of standards development, including due process, broad consensus, transparency, balance and universal openness.

Collective empowerment to strive to develop standards that are chosen and defined based on technical merit, as judged by the contributed expertise of an open and global experts community; provide global interoperability, scalability, stability, and resiliency; enable global competition; serve as building blocks for further innovation; and contribute to the creation of benefit for humanity.

Availability of standards specifications; they are made globally accessible to all for implementation and deployment; moreover, the proponents of this paradigm have defined procedures to develop specifications that can be implemented under fair terms, ensuring thus a broad affordability of the outcome of the standardization process (openness of input and output).

Voluntary adoption of the standards by the market and that their success is determined by the market.

An Open Standardization Process: Enabling Technology Advancement to Address Global Issues

Globally open standardization processes and standards produced through a collective of standards bodies adhering to such principles are essential for technology advancement to ultimately benefit humanity, as the global expert communities address directly, in an open and collaborative way, such global issues of sustainability, cyber-security, privacy, education and capacity building. The nation-centric concept of standardization embodied by the current WTO rules implies significant government influence and may lead to a temptation to pick national/regional winners. Moreover, it is necessarily a more “controlled” system, open during the decisive early standards development phase only to national/regional representatives, and constraining the development of standards used for regulatory purposes to a limited collection of international standards bodies.

Globally open standards have helped humanity achieve essential goals: enhanced public health and safety, technology innovation, market expansion and job growth, and the rollout of more sound and interoperable products at lower cost. An example of how these types of open standards have helped humanity can be found by examining the many applications for the global suite of Ethernet technology standards. With more than 1.2 billion ports shipped in 2012 alone, Ethernet ranks highly among those technologies that impact day-to-day life on a global scale. From datacenters, PCs, laptops, smartphones to power infrastructure and smart meters, personal medical devices, connected cars and more, Ethernet touches all these established and emerging technologies through the collective contributions of individuals throughout industry, academia and government. These types of standards are underpinnings of social wellbeing, and their value and necessity are coming into even sharper focus in the age of globalization.

The acceleration and convergence of technology in addition to the emergence of new radical innovations, growing global markets and increased global challenges (e.g., climate change, depletion of natural resources and environmental hazards, energy supply, e-health, cyber-security and privacy), bring new actors and bodies into the standardization arena. Standards development environments, associated processes/models and related treaty and global institutional bodies need to be poised to engage new actors such as civil

8 OpenStand is an initiative jointly launched by IAB, IEEE, IETF, ISOC and W3C in August 2012 to raise awareness about a market-driven standards paradigm conveyed through a set of principles and with the opportunity for supporters to show public support.


10 http://www.forbes.com/sites/markfidelman/2012/05/02/the-latest-infographics-mobile-business-statistics-for-2012/
society organizations, and be flexible to address rapidly evolving and changing dynamics in the standards ecosystem to ensure innovation for market growth and societal benefit.

3. Response

The current World Trade Organization (WTO) conception of standards did not anticipate the magnitude of economic, technological and societal evolution and growth and the resulting challenges. It carries a nation-centric view to align with its country-based Membership. This presents challenges for organizations not fitting within this paradigm, it encumbers direct recognition of associated contributions and standards, and hinders opportunities for transnational communities of technical experts to cooperate and exchange information at the decisive early phases of standards development that can foster all-encompassing innovation dynamics at a global scale. It is precisely this type of innovation that can serve to advance global win-win dynamics, market growth and address global challenges resulting in the advancement of technology for the benefit of humanity. The most effective way to provide for multi-stakeholder engagement and direct participation outside of the current limitations of international standards and standardization definitions and practices is to cultivate a renewed framework for standards that encompasses and recognizes the globally open standards approach. Successful progression toward this framework serves as the impetus for institutional bodies to redefine their concepts of standards and standardization.

Revisiting the WTO’s approach to standards

The WTO can herald impactful transformation through evolving its concept of standards in the WTO TBT Agreement, and associated Code of Good Practice and the 2000 Decision on Principles for the Development of International Standards, Guides and Recommendations, in efforts to develop a “level-playing field” for all actors; and by serving as a global advocate for universal inclusivity. It should focus on whether a standard meets market need by the standard itself and an open, inclusive process by which the standard was developed. It can be argued that a limited number of named bodies, that “fit” the current definition of international standards body in the WTO TBT Agreement cannot produce the diversity of standards needed to meet the market needs. It is the diversity of bodies and stakeholders that will promote innovation and help ensure that standards are of high quality and respond to regulatory and market needs (Wijkstrom and McDaniels). Specifically, the WTO, via the TBT Committee, should:

- Re-conceptualize its paradigm of international standards and standardization;
- Reformulate its definition of international standards and standards organizations;
- Establish practices that foster and accept direct participation from global actors outside of the nation-centric archetype, including standards bodies, NGOs and industry; and
- Champion cross-global Institution change to align with greater inclusivity and broader definitions of standards and standards bodies, and inaugurate a shared a priori universally open global paradigm.

A practical application could be for the WTO to create an open platform to discuss and analyze the current definition of international standards and international standards bodies in the WTO TBT Agreement and associated Code of Good Practice and the 2000 Decision on Principles for the Development of International Standards, Guides and Recommendations with a focus on impact on innovation, regulation and growing societal issues and needs, and in the context of globalization and the value of an a priori standards development system and paradigm.

The WTO TBT Agreement obliges governments to use international standards as a basis for regulations. International standards are used by the agreement as a means to promote international harmonization of technical regulations, conformity assessment procedures and national standards (Wijkstrom and McDaniels, 2013). In the WTO TBT Agreement, as well as in various institutional venues and discussions, standards and standardization are qualified with a need to be “international” and an implied mandate that they are developed, adopted and/or recognized through the national

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11 The full text of the WTO TBT Agreement, see http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm.
standards system and by such bodies as IEC, ISO and ITU. Specifically in the WTO TBT Agreement, such qualifiers are made:

“Recognizing the important contributions that international standards and conformity assessment systems can make in this regard by improving efficiency of production and facilitating the conduct of international trade;”

“Desiring therefore to encourage the development of such international standards and conformity assessment systems;”

“Recognizing the contribution which international standards can make to the transfer of technology from developed to developing countries;”

Article 1 General Provisions 1.1 “General terms for standardization and procedures for assessment of conformity shall normally have the meaning given to them by definition adopted within the United Nations system and by international standardizing bodies taking into account their context and in the light of the object and purpose of this agreement.”

Article 2 Preparation, Adoption and Application of Technical Regulations by Central Government Bodies 2.6 “With a view to harmonizing technical regulations on as wide a basis as possible, Members shall play a full part, within the limits for their resources, in the preparation by appropriate international standardizing bodies of international standards for products for which they have either have adopted, or expect to adopt, technical regulations.”

These qualifications are further supported by Annex 3 Code of Good Practice for the Preparation, Adoption and Application of Standards, and General Provisions C. “Standardizing bodies that have accepted or withdrawn from this Code shall notify this fact to the ISO/IEC Information Centre in Geneva . . . The notification may be sent either directly to the ISO/IEC Information Centre, or through the national member body of ISO/IEC or, preferably, through the relevant national member or international affiliate of ISONET, as appropriate.”

A significant decision taken by the WTO TBT Committee relates to international standards: the 2000 Decision on Principles for the Development of International Standards, Guides and Recommendations with Relation to Articles 2, 5 and Annex 3 of the TBT Agreement. This decision set forth six principles for the process of international standards development. These are summarized below (Wijkstra and McDaniel, 2013).

Transparency: All essential information regarding current work programs should be made easily accessible to at least all interested parties in the territories of at least all WTO Members.

Openness: Membership of an international standardizing body should be open on a nondiscriminatory basis to relevant bodies of at least all WTO Members. This would include openness, without discrimination, with respect to the participation at the policy development level and at every stage of standards development.

Impartiality and consensus: All relevant bodies of WTO Members should be provided with meaningful opportunities to contribute to the elaboration of an international standard so that the standard development process will not give privilege to, or favor the interests of a particular supplier, country or region.

Effectiveness and relevance: In order to serve the interests of the WTO membership in facilitating international trade and preventing unnecessary trade barriers, international standards need to be relevant and effectively respond to regulatory and market needs, as well as scientific and technological developments in various countries. They should not distort the global market, have adverse effects on fair competition, or stifle innovation and technological development.

Coherence: In order to avoid the development of conflicting international standards, it is important that international standardizing bodies avoid duplication of, or overlap with the work of other international standardizing bodies.

12 For the full text of the Code, see: http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm#annexIII.

13 Full text of the Decision can be accessed at: http://www.wto.org/english/res_e/res_e.html
In examining these six principles, opportunities are identified to reestablish the concept of standards and standardization and to align the principles with globally open standards approach. For example, regarding the principle of Openness, which promotes openness in the context of participation without discrimination at every stage of standards development, discrimination factors that create barriers for organizations not fitting the current nation-centric logic may be addressed to foster increased inclusivity. Regarding the principle of Effectiveness and Relevance, which demands for international standards not to stifle innovation and technological development, improved innovation and technological development may be realized through unencumbered access to and participation in open, voluntary standards outside of the constraints of a narrowly defined paradigm of national/regional consensus standards first.

By participating in the development of and by making use of standards developed in a market-driven paradigm that enables and embraces global openness, diversity and respect, stakeholders in developing countries have an opportunity of co-shaping and accessing knowledge to help drive improvements, innovation and economic growth. By setting a commonly agreed baseline for new technologies to evolve - to be innovated upon - standards facilitate large-scale incremental technological change. Standards open new markets and applications and make broadly available proprietary knowledge for current and future innovative technologies. Globally open standards development forums help promote solutions and provide networking opportunities with and among cross national/regional experts’ communities, creating vibrant, open ecosystems that provide multiple sources of readily available information and expertise.

Standardization is a platform used by researchers and other actors in the innovation process and standards are important components in the framework conditions for research, development and innovation. Standards are a vehicle for sharing of knowledge, technology and good practices. In a 2011 DIN study on the economic benefits of standardization, it was noted that in order to ensure continued economic growth, it is not sufficient to only create new knowledge through R&D or to import it, additionally this knowledge must be broadly disseminated so that as many organizations and individuals as possible make use of it. Open standards are particularly suitable tools for the dissemination of knowledge because of their broad accessibility. Leveraging existing standards from an inclusive collective of standardization bodies is essential for maximizing the gains of innovation, especially as many countries rely heavily on the adoption of innovations from abroad for their own innovation performance (DIN, 2011).

The OECD Science, Technology and Industry Working Papers state that many OECD countries have the framework conditions to boost innovation but find that innovation performance, although good in comparison to peers, has not sufficiently raised productivity and growth to improve living standards or address key global challenges. New and improved products, services and ways of producing them are a major driver of economic growth. Moreover, there is the potential to meet global challenges with the application of innovative solutions that require a global and inclusive perspective and for which science, technology and innovation must play a key role in finding solutions (Box, 2009). The global perspective needed can be enhanced by the evolution of the international standards arena and institutional bodies to be inclusive of those organizations that do not meet the current definition of a nation-centric or intergovernmental-type standards body.

A truly global standards community can play a role in standards knowledge and institution building within developing countries and economies to help generate local innovation through collective strategic efforts and increased networks among industry, NGOs, standards bodies and government bodies. This can foster knowledge development and distribution and bring diverse resources together to build local capabilities and capacity. By making use of global standards that are developed in a market-driven paradigm enabling and embracing openness, diversity and respect, stakeholders in developing countries have direct access to knowledge to help drive improvements, innovation and economic growth.

4. Conclusion

As the WTO addresses the future of world trade in an era of accelerated technological innovation pace and convergence and digitalization, it is vital to also address how trade and innovation work together. Central themes to include are the impact of standards on innovation, standards
development as part of the core of the innovation system itself (not only an adds-on) and the need for greater inclusivity to confront challenges and realize opportunities presented by globalization and the digitalization of the world. A good standard should reflect at least state-of-the-art scientific and technological developments. The TBT Agreement, when assessing the risk of a given technical regulation (standard), states that an element of consideration is “available scientific and technical information.”\textsuperscript{14} Confidence in the integrity and quality of a standard will help promote its widespread use and will contribute to innovation. To ensure comprehensive scientific and technical information has been contributed and considered, greater inclusivity in the process is needed. Greater inclusiveness and closer cooperation and thus a more level playing field can be realized through an explicit acknowledgement of the value of the standards setting and developing bodies following the aforementioned globally open, market driven paradigm for standards.

This will require dialogue and consideration of the concept of standards and standardization to progress beyond nation-centricity and intergovernmental arrangements. It will also require the direct recognition of associated contributions and standards from communities of experts who cooperate, exchange information, build knowledge and foster innovation on a global scale at all phases of standards development, working in the construct of universal openness.

Well-developed standards serve as a form of knowledge transfer, as noted in the TBT Agreement Preamble, and are particularly valuable to countries that do not have the resources to participate or develop standards themselves. In particular, many globally used and implemented standards that seem to fall outside of the concept of standards produced by international standards bodies according to the current WTO can be directly utilized by developing countries. As it stands today, these contributions are not sufficiently leveraged for innovation and capacity building. Per the World Trade Organization Economic Research and Statistics Division staff working paper on \textit{International Standards and the WTO TBT: Improving Governance for Regulatory Alignment} a suggestion is put forth for a more simplified vision for governance of international standards setting, with a greater focus on the substantive content of the standard and the manner in which it has been developed. It further states that focusing on how standards are developed and set (procedures) could help promote improved national coordination, and focusing minds on technical issues and related policy questions could create a support system for coordination (Wijkstrom and McDaniels, 2013). For such a support system to be effective, barriers to participation need to be removed.

Innovation is the major source of growth and welfare for the world economy. Effective and efficient deployment of standardization promotes innovation and interoperability. A priori globally open standards create win-win dynamics, encouraging innovation and growth. Businesses with a desire to commercialize emerging technologies are part of a developing business “ecosystem”, and the better the opportunity to exploit the networks within the ecosystem, the faster the market for their products will grow. Universal growth and social progress can be fostered much more rapidly and efficiently through an inclusive, open and global economy that supports new business opportunities, enables commerce between all parties in dynamic ways, opens new territories, encourages competition, expands market presence and creates new business models. The principles expressed through the OpenStand initiative provide a framework for standards development in an increasingly global market with diverse needs via a platform of respectful cooperation between standards organizations and actors, including adherence to the fundamental principles of due process, broad consensus, transparency, balance and openness—which are tenants of the WTO TBT \textit{Code of Good Practice}.\textsuperscript{14}

\textsuperscript{14} The full text of the WTO TBT Agreement, see http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm
References


