WORLD TRADE

ORGANIZATION

Working Party on Domestic Regulation

TECHNICAL STANDARDS IN SERVICES

Note by the Secretariat[1]

1.	At the request of the Working Party on Domestic Regulation, following the meetings of 28 October and 4 November 2011, this Secretariat Note provides background information on technical standards in services. In particular, it seeks to clarify three issues: (i) what are technical standards in services? (ii) how are they developed and by whom? and (iii) how are they used?

2.	The Note is divided into three sections. The first section discusses the role of standards and their application to services. In this section, different examples of standards found in service sectors will be used to illustrate their typical content and scope. The second section explains how such standards are developed at national, regional and international levels, and the various agencies involved. It also discusses how standards, even if voluntary, can become a mandatory obligation by being referred to, or incorporated, into a law or regulation. It should be noted that, since standardizing bodies have, in the main, the same framework for developing both product[2] and services standards, many of the processes described in this Note apply to both. The section also discusses the role of international standards and conformity assessment. The third section contains some concluding observations based on the foregoing analysis.

3.	The purpose of this Note is to assist Members in the context of the technical discussions which have been undertaken pursuant to the mandate contained in Article VI.4 of the GATS to negotiate domestic regulation disciplines. It does not purport to interpret the use of this term in documents submitted by Members nor does it seek to establish a definition of the term 'technical standards'.

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[1] This document has been prepared under the Secretariat's own responsibility and without prejudice to the positions of Members and to their rights and obligations under the WTO.

[2] The term 'product' is used in this Note to refer to 'goods'.

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I.   TECHNICAL STANDARDS IN SERVICES

4.   At the outset, a distinction is needed between *de facto* and formal standards. The former are informal, in the sense that they are standards that have achieved widespread use in the market without having been formulated or adopted by any standardizing body. Sometimes a *de facto* industry standard might become a formal standard. For example, the PDF computer file format created by Adobe in 1993 adhered to certain internal standards, but these were neither published nor coordinated by a standards body. The format and the standards it used achieved widespread use and became the industry standard. It was only later in 2005, that PDF/A became a formal standard as ISO 19005-1:2005.[3] Formal standards, on the other hand, are formulated by a standardizing body and are usually adopted by consensus by the various stakeholders involved in the process.

5.   It should be noted that the focus of this Note is on the development of formal standards and not *de facto* standards. In the literature, the terms 'standards organizations', 'standards body', 'standards developing organization' or 'standards setting organization' are used to generally refer to any organization whose activities involve the development and publication of standards. For the purposes of this Note these bodies will be referred to as standardizing bodies. It should also be noted that amongst such bodies the term 'services standard' appears to be more commonly used than 'technical standards in services'. In this Note, both terms are used interchangeably.

A.   WHAT IS A 'STANDARD'?

6.   Given that standards were first created for manufacturing purposes, the concepts used in standardization often relate to the use of certain measurements, materials, dimensions, procedures, formats or units, which is why they are sometimes referred to as 'technical standards'. Standardizing bodies do not, however, generally make a distinction on the basis of whether a standard is technical or not since, by definition, a standard will include technical content.

7.   At its very simplest, a standard would refer to an agreed, repeatable way of doing something. In more elaborate definitions, a standard would also refer to the form the product takes and the way by which it has been developed. The International Organization for Standardization (ISO), for instance, defines a standard as follows:

> "A document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context. *NOTE Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits*".[4]

8.   The ISO, which uses the term 'services standard', defines it as a standard that specifies the requirements to be fulfilled by a service, to establish its fitness for purpose. The concept of fitness for purpose is, in turn, defined as the ability of a product, process or service to serve a defined purpose under specific conditions.

9.   As used in American Society for Testing and Materials (ASTM) International, a standard is a document that has been developed and established within the consensus principles of the organization and which meets the requirements of ASTM procedures and regulations. Full consensus

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[3] ISO 19005-1:2005. Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF 1.4 (PDF/A-1).

[4] ISO/IEC Guide 2:2004, definition 3.2.

standards are developed with the participation of all parties who have a stake in the standard's development and/or use.[5]

10.   The term 'standard' as contained in the above definitions covers products, processes and services. These definitions are often used by many other national or regional standards bodies without modification, or with some slight amendments. For instance, the European Committee for Standardization (CEN) describes a standard as a "technical publication that is used as a rule, guideline or definition", which is developed through consensus, by all interested parties including manufacturers, consumers and regulators of a particular material, product, process or service. Similar definitions can be found at the national level.

11.   The American National Standards Institute, for example, uses the same definition as the ISO. British Standards defines a standard as "a published document that contains a technical specification or other precise criteria designed to be used consistently as a rule, guideline, or definition".[6] Standards Australia refers to standards as "published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to. They establish a common language which defines quality and safety criteria".[7]   Similar elements are contained in the definition used by the Kenya Bureau of Standards, where a Kenyan standard is defined as a "document established by consensus and approved by the Kenya Bureau of Standards, that provides for common and repeated use, rules, guidelines or characteristics for products and services and related processes or production methods, aimed at the achievement of the optimum degree of order in a given context. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method".[8] The Barbados National Standards Institution, on the other hand, broadly defines a standard as "a published document by a recognised authority that contains guidelines or criteria for executing a particular task".[9]

12.   In some definitions, it is set out that standards are not mandatory. Standards Malaysia, for example, defines a standard as "a document approved by a recognized body, that provides for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is not mandatory; and which may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method."[10]   The US Department of Energy defines technical standards as "performance-based or design-specific technical specifications and related management systems practices" that are developed and adopted by voluntary consensus standards bodies.[11] Under the Mexican Federal Law on Metrology and Standardization (FLMS) a technical standard is one "which is drawn up by a national standardization body of the Ministry of the Economy under the terms of this Law and which lays down for common and repeated use, rules, specifications, functions, testing methods, guidelines, characteristics or prescriptions applying to a product, process, facility, system, activity, service or method of production or operation, and those pertaining to terminology, packaging, marking or labelling".[12]   Under the FLMS, a technical regulation, while having similar characteristics to a standard, is defined as a mandatory requirement.

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[5] Reproduced from the ASTM International website: http://www.astm.org/ABOUT/faqs.html
[6] Source: http://www.bsigroup.com/en/Standards-and-Publications/About-standards/What-is-a-standard
[7] Source: http://www.standards.org.au/StandardsDevelopment/What_is_a_Standard/Pages/default.aspx
[8] Source: http://www.kebs.org/index.php?opt=standards#
[9] Source: http://www.bnsi.bb/?q=faq
[10] Standards of Malaysia Act 1996 (Act 549).
[11] US Department of Energy, Technical Standards Program Guide, 19 November 1999.
[12] S/WPDR/W/30, 24 September 2004, p.3.

13.   While these are but a few of the many definitions used by standardizing bodies, certain common elements appear. Very generally, a standard is contained in a document, usually developed through consensus by a recognized body, which contains requirements, rules and guidelines for a process, product or service. Standards are typically designed to be used consistently and repeatedly, with the aim of ensuring that the product or service conforms to certain characteristics, or in the case of a service, is performed in a certain manner. These requirements are sometimes complemented by specifications which describe the actual process and the technical requirements to be fulfilled.[13]

14.   A distinction needs to be made between the process of developing, issuing and implementing standards, which is called standardization and their enforcement through legislation. The formal process of standardization is usually directed at publishing standards developed through consensus amongst the parties involved and approved by a recognized body. Adoption or approval of a standard by either a national, regional or international standardizing body does not, however, make adherence to the standard mandatory. The vast majority of standards are designed for voluntary use in the sense that they are offered for adoption by standardizing bodies without being mandated by law. Although many standards are not mandatory, they are widely used by the private sector as they can help define a particular market segment, resolve issues of compatibility and help improve quality.

15.   Nevertheless, it is only when observance of a particular standard is required by law does such a standard become mandatory, and then only within the jurisdiction covered by the legislation. Usually, this is done by incorporation or by reference in the relevant act or rule. Box 1 provides examples of two cases, one where the possibility to incorporate standards is not limited to those developed by a government agency, and another where it is specified that the standards that have to be complied with are those issued by the State. Often, mandatory compliance through legislation is undertaken in order to address public health, safety and environmental concerns.

Box 1: Example of a provision allowing for the incorporation of standards into rules

Excerpt from the Maritime Transport Act 1994 of New Zealand

452 Incorporation in rules of material by reference

(1) The following may be incorporated by reference into a rule made under this Act:
      (a) standards, requirements, or recommended practices of international or national organisations:
      (b) standards, requirements, or rules in force in any other jurisdiction:
      (c) standards, requirements, or rules, of any classification society or similar organisation:
      (d) standards, requirements, or rules, of any maritime sporting or maritime recreational organisation:
      (e) any other written material or document that, in the opinion of the Minister is too large or impractical to be printed as part of the rule.

Excerpt from Regulations on International Maritime Transportation (Adopted at the 49th Executive Meeting of the State Council on December 5, 2001, promulgated by Decree No. 335 of the State Council of the People's Republic of China on December 11, 2001, and effective as of January 1, 2002)

Chapter II Operators of International Maritime Transportation and Auxiliary Businesses Thereof

Article 5

To be engaged in international shipping services, the following conditions shall be met:
      (1) having vessels suitable for employment in international maritime transportation, among which there must be vessels of Chinese nationality;

Box 1 (cont'd)

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[13] See UNIDO (2006), Role of standards: A guide for small and medium sized enterprises, Working Paper, Vienna.

(2) vessels under employment shall be in compliance with the <u>technical standards for maritime traffic safety as set forth by the State</u>; (emphasis added)
(3) having bills of lading, passenger tickets or multi-modal transportation documents;
(4) having senior executives with the professional qualifications as set forth by the competent communications department of the State Council.

Source: Websites of Maritime New Zealand (http://www.maritimenz.govt.nz/rules) and COSCO Group (www.cosco.com/en/pic/research/28734352881917224.pdf).

16. When published, standards are generally designated by a few letters (prefix) and a number. The letters (e.g. ISO, EN, BS) indicate the standardizing body which has approved them, and the number identifies the specific standard. The standards reference number quite frequently gives an indication of the standardizing bodies involved and the chain of adoption. For example, the reference "UNI EN ISO 9001" indicates an Italian national standard (UNI) which is an adoption of a European standard (EN), which itself is an adoption of International Standard ISO 9001.[14] Most standards are published for sale, the receipts of which can be an important source of income for the standardizing body.

B.   'STANDARDS' AND 'TECHNICAL REGULATIONS' IN THE TBT AGREEMENT AND 'TECHNICAL STANDARDS' IN THE GATS

17. In the WTO TBT Agreement, a 'standard' is defined as a:

> "Document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which <u>compliance is not mandatory</u>. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method". (emphasis added)

18. This is distinguished from a 'technical regulation' which is defined as a:

> "Document which lays down product characteristics or their related processes and production methods, including applicable administrative provisions, with which <u>compliance is mandatory</u>. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method". (emphasis added)

19. The Explanatory Note to Annex 1 of the TBT Agreement specifies that "For the purpose of this Agreement standards are defined as voluntary and technical regulations as mandatory documents".

20. No definition of the term 'technical standards' is provided in the GATS, although the term appears in GATS Articles VI:4 and VI:5, the Accountancy Disciplines and in the Decision on Professional Services.[15] Nevertheless, discussions amongst Members in the context of the negotiations of the Disciplines on Domestic Regulation in the Accountancy Sector[16] have tended to suggest that 'technical standards' could be understood as criteria or rules specifying the characteristics of the service (e.g. the format of financial reports), as well as the manner in which it should be

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[14] Example provided by the World Standards Services Network, http://www.wssn.net/WSSN/faqs.html
[15] It should be noted that this Note does not analyse the schedules of specific commitments of Members.
[16] The Disciplines are contained in the document S/L/64, 17 December 1998.

performed (e.g. the way in which an audit must be performed including the checks that must be performed, the way work should be documented and so on).

21.   Previous Secretariat Notes have highlighted that, "in the accountancy profession, technical standards define, for example, the way a normally diligent auditor should perform an audit, i.e, which types of checks he should perform according to the type of company (industrial companies, banks, small- and medium-sized enterprises, etc.), the way work should be documented, etc".[17] Technical standards have also been described as "requirements which may apply both to the characteristics or definition of the service itself and to the manner in which it is performed".[18] The distinction made between the "characteristics of a service" and the "manner in which it supplied" is somewhat akin to that made in the TBT Agreement between "product characteristics" and "related processes and production methods".

22.   In the context of the accountancy sector, as well as for many other service sectors, a further distinction can often be made between the requirements on: (i) the service supplier; as distinct from those on (ii) the service itself. Suppliers of accountancy services would typically be required to have an appropriate qualification, be approved by the competent authorities of the country, adhere to a professional body, comply with a code of conduct, etc., in order to be permitted to practice that profession and to use its functional title. By possessing such qualification requirements, the service supplier would provide evidence of competence. Requirements on the service, such as technical standards, would take the form of rules or criteria which define content, the procedures to be followed, the frequency and format for the delivery of the service, etc.

23.   In a given market place, different standards can co-exist for the same service, allowing consumers to choose. Unless aligned according to an international standard, there may be numerous national differences in the technical standards adopted by countries, which can make the recognition of services or the identification of corresponding services between jurisdictions a real challenge.

24.   Thus, Article VI:5(b) provides that, in determining whether a Member's domestic regulations are in conformity with the Article VI:4 criteria, account shall be taken of international standards of relevant international organizations applied by that Member.[19] The Accountancy Disciplines further provide that:

> "25.   Members shall ensure that measures relating to technical standards are prepared, adopted and applied only to fulfil legitimate objectives.
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> 26.   In determining whether a measure is in conformity with the obligations under paragraph 2, account shall be taken of internationally recognized standards of relevant international organizations[3] applied by that Member.
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> [3] The term "relevant international organizations" refers to international bodies whose membership is open to the relevant bodies of at least all Members of the WTO."

25.   Neither Article VI:5(b) nor the Accountancy Disciplines go as far as the TBT Agreement, which states in Article 2:4 that, where relevant international standards exist or their completion is imminent, Members must use them, or the relevant parts of them, as a basis for their technical

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[17] S/WPPS/W/1, 27 June 1995, p.3.
[18] S/WPPS/W/9, 11 September 1996, p.9.
[19] The Article provides in a footnote that the term 'relevant international organizations' refers to international bodies whose membership is open to the relevant bodies of at least all Members of the WTO.

regulations except when they would be ineffective or inappropriate means of fulfilling legitimate objectives.

26.   A further consideration to keep in mind is that under the TBT Agreement, there is a clear distinction between 'standards' as voluntary and 'technical regulations' as mandatory, with differing sets of obligations on Members. Currently, no such distinction is made in the GATS and standards, be they voluntary or otherwise, could fall within the scope of the GATS provided that they meet the criteria specified in Article I of the GATS which provides that the Agreement "applies to measures by Members affecting trade in services".   It further provides in Article I:3(a) that "measures by Members" means measures taken by: "(i) central, regional or local governments and authorities; and (ii) non-governmental bodies in the exercise of powers delegated by central, regional or local governments or authorities". The term 'measure' is, in turn, defined in Article XXVIII as meaning "any measure by a Member, whether in the form of a law, regulation, rule, procedure, decision, administrative action, or any other form".   The form which a measure might take is thus not exhaustively listed and the critical questions are the entity which takes it and the effect it has on trade in services.

C.   PURPOSE OF STANDARDS

27.   Standards are intended to fulfil diverse functions, which are often related to the need to ensure the reliability, quality and effectiveness of many products and services. In particular, standards are often developed to provide compatibility, improve transparency and address negative production and consumption externalities. The roles described below are not meant to be exhaustive; rather, the intention is to illustrate the types of problems which are typically addressed:

> (a)   <u>Compatibility and interoperability</u>. Standards are often required to ensure that processes, products or services can be used together. For instance, in electronic data processing, standard codes are needed to allow different systems to store, transmit and retrieve information.   In the telecommunications sector, for instance, a standard protocol is needed to allow two networks to communicate with each other. In the context of data communication, a network protocol is a formal set of rules, conventions and data structure that governs how computers and other network devices exchange information over a network. The protocol must be based on a standard procedure which different data communication devices can understand, accept and use to be able to interact with each other. The standard may also help companies avoid dependence on a single supplier because its availability could increase competition among suppliers and stimulate economies of scale.[20] This is referred to as a network effect, where a system that is widely used by others increases its desirability and value. If left alone, the market might over-supply the number of potential solutions. If every company involved in data communication were to use its own protocol, the network effect and economies of scale would be reduced. A compatibility standard could generate positive externalities and help make the market more efficient by promoting adherence to an industry standard.[21] However, there could be risks that the specifications could create anti-competitive effects, particularly if it is designed by incumbent operators in such a way so as to exclude new entrants or raise the costs of entry into the market.

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[20] However, competition may suffer where companies internalize the benefits of standards through proprietary standards (Blind, K. (2004), "The Economics of Standards: Theory, Evidence, Policy", Cheltenham: Edward Elgar, pp. 43-45).

[21] For more on the compatibility function of standards, see in particular Blind (2004), pp. 14-18, as well as Swann, P. (2000), "The Economics of Standardization, final report for the Standards and Technical Regulation, Directorate Department of Trade and Industry, Manchester", University of Manchester.

(b)   Information asymmetries. A standard may also address information asymmetries between the producer and user, and provide a minimum assurance of safety or quality. This can be particularly important in services since, unlike products, it is not possible to physically evaluate the quality of a service or to specify its content through a label. Users frequently cannot appreciate the quality of the service until they have consumed it. Such problems are accentuated by the fact that the end user may not always have the expertise to assess the technical information they have been given or to differentiate between an array of broadly similar services. It is also difficult for users, who may be non-specialists, to always spell out the optimum parameters for the performance of a service. Compliance by a service supplier to a standard can help give the user confidence that the service is provided safely and that quality expectations are met, thus reducing information asymmetries. It can also be important for the service supplier to demonstrate adherence to a particular quality standard, so as to differentiate its services from those provided by other suppliers. By laying down conditions on what the service should contain and how it should it be performed, commonly recognized and accepted standards can help reduce information and transaction costs.

(c)   Negative externalities. Standards are not only about addressing the concerns of producers and consumers involved in a particular transaction. The development of a standard may also be about addressing a common – even global – problem that is not adequately taken into account by either the producer or user. It may provide a solution that is more optimal than what would arise if each industry (or each government) worked in isolation. As such, using standards to address externalities is often one of the main drivers for international cooperation. One example might be the adoption of international standards to reduce greenhouse gas emissions by the transport sector.   Another might be the development and implementation of internationally accepted financial standards that can help promote sound domestic financial systems and thus enhance international financial stability.

28.   An important consideration in whether these goals are met is the level at which the standard is set and the parties involved in doing so. It cannot automatically be assumed that all standards will be set at the optimum level to enhance competition and efficiency in the market. There are risks that the standard might favour certain players in the market, as they are based on practices which they have already adopted or are most suited to following. In such a situation, the standard might only solidify the status quo and make it difficult for new competitors to join the market. The question of how the standard is set and by whom is thus vital. These issues are discussed further in section II.

D.   WHAT ARE SOME EXAMPLES OF TECHNICAL STANDARDS IN SERVICES?

29.   In the case of goods, standards are typically based on the physical properties of the final product (product standards) or the process by which the product was produced (process standards). The latter may or may not leave a trace on the product itself. When it comes to services, it is important to appreciate that, since the nature of service provision is different from that of goods, there are significant challenges to standardization. Firstly, a service is not usually defined by physical properties, and often its delivery requires direct interaction between the service supplier and the consumer. Standardization of the service based on its physical dimensions or material content would not appear to be feasible. That being the case, the use of particular equipment, infrastructure or technology could be critical to how the service is performed and supplied. Indeed, in some cases the use of certain equipment is synonymous and indistinguishable from the service itself. For instance, credit card payments and cash withdrawals from automatic teller machines (ATMs) would not be possible if there were no common standards for the design and format of the cards and machines, as

well as for the operating system utilized. Likewise, ATMs and credit cards would serve no purpose if payment and money transmission services were not possible.

30.   Secondly, assessments of quality and fitness for purpose will be different for a service as compared to a manufactured good. Unlike a physical product, a service cannot easily be subjected to a laboratory test to see whether it contains particular materials or performs in a certain way. Thus, greater emphasis has traditionally been given to assessing the competence of the service supplier and the satisfaction of customers. Both are indirect means of controlling for quality, as the former relies on there being a positive link between the qualifications of the service supplier and the service supplied, while the latter can only assess outcomes. It also suggests that, in services, there is a close relationship between qualification requirements and services standards. Indeed, in many cases, the standard will specify requirements on the qualifications to be possessed by the service supplier.

31.   Despite these challenges, standardizing bodies have published standards specifically for services. Existing services standards as described by the ISO provide "either a description of the service as such, for example by setting out typical parameters and definitions of procedures, or specify the requirements to be met by the company offering the service, for example as regards the technical equipment needed to deliver the service or the recommended qualifications of the staff performing it".[22] Services standards can also cover requirements and technical specifications on the resources and facilities required for the service, the terminology used and the information to be submitted to the service consumer.

32.   Existing studies point to the fact that the use of services standards is modest in comparison to product standards, and does not reflect the growing importance of the service sector.[23] Interest in the role of services standards is, however, increasing with the growing share of services in national economies, as well as in international trade. The ISO, for instance, has noted that standardization has, for some years, been going beyond traditional, product-focused technical fields to include the service sector. Over the last five years, the ISO has created some 40 new technical or project committees, with about half of them related to services.[24]

33.   In Europe, the development of dedicated regional services standards has been earmarked as an important objective for the single market.[25] During the period 1995 to 2009, the Technopolis Group recorded the publication of 364 services standards.[26] This is a very small fraction of total European standards which number around 15,000.[27] Of these standards, 11 per cent were published between 1995 and 1999, while 56 per cent were published over the period 2005 to 2009. There is thus a general upward trend, which is expected to grow with the emphasis given in the Services Directive

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[22] ISO Focus +, Volume 3, No. 3, March 2012, ISSN 2226-1095.

[23] Blind, K (2003), "Standards in the service sectors: An Explorative Study", Fraunhofer Institute for Systems and Innovation Research. Germany, 2003.

[24] ISO Focus +, Volume 3, No. 3, March 2012, ISSN 2226-1095.

[25] Two mandates from the EC and the European Free Trade Area were given to the European standards bodies CEN (European Centre for Standardization), CENELEC (European Committee for Electrotechnical Standardization) and ETSI (European Telecommunications Standards Institute). These organizations were requested to undertake standardization work to support the EU's internal market for services.

[26] Technopolis Group (2010), "Mapping services standardisation in Europe", Final Report to the Danish Enterprise and Construction Authority, 10 November 2010, available at http://www.ebst.dk/file/147979/DEACA_Final_Report.pdf

[27] Based on estimates by Blind, K (2006), "A taxonomy of standards in the service sector", The Services Industries Journal, 26:4, pp.397-420.

to promoting European standardization so as to facilitate the compatibility, interoperability and quality of services.[28]

34.   Based on the WTO Sectoral Classification list, the Technopolis Group in its survey of European services standards found that, while standards have been developed in all service sectors, over a third were in business services.[29] In this sector, most are concentrated in other business services which include advertising, market research, consultancy, cleaning services, customer contact, maintenance and facilities management, and security services. It is perhaps no coincidence that business services is also the area with the second largest volume of intra-EU trade making up 26 per cent of intra-EU exports. The next largest concentration was in tourism and travel related services, followed by transportation. A study by CEN on services standardization in Europe which used a different methodology found a concentration of standards in tourism services.

35.   As there do not appear to have been other studies of a similar type undertaken in other regions, it is difficult to say what the trends might be in other parts of the world. Also, such estimates do not easily allow for cross-comparison as there is no 'standard' definition of what constitutes a service standard. Many countries, not just within the European region, have not taken steps to differentiate service standards from product standards. Thus, depending on the basis and approach taken, the results will differ. For instance, while the Technopolis Group study found 364 European standards, another study in 2003 found 570.[30] Thus, given these difficulties, it would not be particularly meaningful to try to quantify the number of technical standards in services either by sector or in terms of absolute numbers.

36.   Nevertheless, recent studies on services standardization, particularly those conducted for the European market, suggest that the most common areas for existing service sector standards are in terms of: terminology, quality management, environmental management, safety management, working conditions, education, ethical standards, contractual standards, complaints handling and price regulations.[31] Since the supply of services will typically involve personnel and equipment, services standards often include technical specifications on the type of equipment to be used as well as the qualifications and skills of those supplying the service.

37.   Terminology standards define the terms that may be used to describe the characteristics of the service provided. This can include the use of particular signs and symbols. Such standards may also be concerned with ensuring that the description of the service conforms to certain criteria or standardized usage of a particular term. Terminology standards can help improve transparency and reduce misrepresentation or misleading claims. Agreed definitions are aimed at improving the contractual relationship between the service supplier and the consumer by providing greater certainty of the expected content of the service. For instance, the CEN Tourism Services Technical Committee has produced terminology standards for hotels, tourism accommodation, travel agencies and tour operators. These standards seek to clarify the different types of accommodation and services offered by various tourism professions (see Box 2).

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[28] Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market.

[29] The results, however, varied considerably when different classification of services sectors were used, with most standards found in the tourism sector. This correlates with the finding in the European Centre for Standardization's (CEN) Horizontal European Standardization Strategy, July 2008.

[30] Blind, K (2003), "Standards in the Service Sectors: An Explorative Study", Fraunhofer Institute for Systems and Innovation Research, April 2003.

[31] Technopolis (2010)

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Box 2: Examples of terminology standards

The ISO standard <u>ISO 18513:2003 - Hotels and other types of tourism accommodation - terminology</u>, which was prepared in collaboration with CEN, defines terms used in the tourism industry in relation to the various types of tourism accommodation and other related services. For instance: (i) *Hotel* is an establishment with reception, services and additional facilities where accommodation and, in most cases, meals are available; (ii) *Guest house* is an establishment, often in the countryside, offering food and drink, where some accommodation is also provided; while (iii) *Apartment hotel* is a hotel where accommodation is provided in studios or apartments; etc.

The European Standard <u>EN 13809:2003 - Travel Agencies and tour operators - terminology</u> defines various tourism professions. For example: (i) *Tourist Guide* is a person who guides visitors in the language of their choice and interprets the cultural and natural heritage of an area. The person normally possesses an area-specific qualification usually issued and/or recognized by the appropriate authority; (ii*) Tour Manager* is a person who manages and supervises the itinerary on behalf of the tour operator, ensuring the programme is carried out as described in the tour operator's literature and sold to the traveller/consumer, and who gives local practical information; while (iii) *Tour Escort* is a representative of a tour operator providing basic assistance to travellers; etc.

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Source: Technopolis, 10 November 2010 and ISO.

38.   Many technical standards in services are performance/process-related as they specify the manner by which the service is to be produced or supplied, such as the design of the process, the protocols followed, the actual conditions under which the service is to be performed, as well as the equipment/technology which is to be utilized. Sometimes these process-related standards also specify the public health, safety and environmental conditions that are to be met. Such standards seek to systematically and consistently improve the quality of the service delivered and can assist service suppliers to meet legislative or regulatory requirements. Adherence to performance/process-related standards, particularly when it is accompanied by external certification, can also help consumers distinguish between the different levels of quality offered in the market place (see Box 3). Establishing common processes or detailed specifications on the design and delivery of the service might also be a way of ensuring that results are comparable across countries, replicable and consistent through time.

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Box 3: Examples of performance/process-related standards on service characteristics and quality

Interpretation services

The ASTM International standard <u>ASTM F2089 - 01(2007) Standard Guide for Language Interpretation Services</u> identifies the components of quality language interpretation services and establishes criteria for each component. These criteria define the minimum standard of quality services in the language interpretation industry with reference to distinctive characteristics of specific settings. The needs analysis identifies a procedure for making an informed choice of interpretation services.

Business services

<u>The European Standard EN 12522:1998 - Furniture removal activities - Furniture removal for private individuals (Parts 1 and 2)</u> is aimed at specifying the content of the service as well as how it is to be performed. The first part (Part 1: Service Specification) covers all services agreed upon between the supplier and the customer, including the characteristics that allow this service to be assessed. It specifies minimum qualitative and quantitative rules and characteristics for the service specifications of a furniture removal service, including transport and packaging materials, and the information provided to the customer. The second part (Part 2: Provision of service) covers all the elements involved in the supply of the service including the personnel, the

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Box 3 (cont'd)

equipment, the organization and technical requirements for each phase of the furniture removal service. Performance standards would also include those concerned with ensuring compatibility and interoperability of different technologies, protocols and processes.

The Danish Standard DS/INSTA 800 E:2007 - Cleaning quality - Measuring system for assessment and rating of cleaning quality is a standard for the establishment and assessment of cleaning systems. It was developed as a way of measuring and demonstrating how well a service has been executed. The standard defines the performance indicators that should be used to assess levels of cleanliness, and enables suppliers and customers to agree on a level of service quality or performance that is based more on the output or result of the service than on the inputs to it.

British and international market research services standard (BS 7911:2003) was a national standard which set minimum standards for data collection and was later adopted as an international standard in ISO 20252:2006 - Market opinion and social research: vocabulary and service requirements. Both standards set technical requirements on how market surveys are to be designed (i.e, sample design and selection, statistical methods used, questionnaire design, etc.) and processed (i.e, handling, analysis and reporting of data, administration of survey processes, provision of final report and archiving of data).

The Italian national standard for contact centre services (UNI 11200:2006) defines the main requirements of the service provided by such centres to ensure an adequate level of service quality, regardless of the organizational model or the technology used.

Medical Services

ASTM International ASTM F1255-90(2008) Standard Practice for Performance of Prehospital Automated Defibrillation provides guidelines for the performance of this procedure. The standard is practice-related and is specifically not meant to deal with equipment specifications, quality assurance or training.

Education services

The ISO standard ISO 29990:2010 - Learning services for non-formal education and training - Basic requirements for service providers specifies basic requirements for education and training. The core elements are on enhancing service quality in the field of learning, enhancing the comparability and transparency of learning services and optimizing processes. One of the objectives of the standard is to avoid that national standards act as technical barriers to trade.

Source: Technopolis, 10 November 2010, ISO Focus +, Volume 3, No.3, March 2012 and ASTM International Standards and Engineering Digital Library.

39. Some performance/process-standards are primarily concerned with ensuring that the service meets minimum health, safety and environmental requirements. By adopting appropriate precautions, which would be defined by the standard, the service supplier is in effect reducing the risks faced by the consumer. In some cases, such standards are developed as part of an industry-based instrument for self-regulation. In others, there could be more direct government involvement in its development and subsequent monitoring. Whether standards on health, safety and environment become embedded in government regulation often depends on the extent or risk of an adverse consequence, the severity of the problem, the nature of the industry concerned, and the need for flexibility or certainty in the regulatory arrangement.[32] Some examples of standards that are primarily aimed at safety and environmental concerns are provided in Box 4.

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[32] Coghlan, Paul (2003), in Alexandra Sidorenko and Christopher Findlay (eds) (2003), Regulation and Market Access, Asia-Pacific Press.

Box 4: Examples of standards to address health, safety, environmental and customer concerns

Tourism

The ISO has established a technical committee on tourism and related services (TC228) which develops standards concerning the delivery and management of safety and security in the tourism industry, as well as environmental concerns. The committee is mandated to standardize terminology and specifications of services offered by tourism service providers, including related activities, tourist destinations and the requirements of facilities and equipment used by them. So far, standards have been developed for recreational diving services; health tourism; tourist information services; and a variety of other leisure and sporting activities.

European Recreational diving services standards (EN 14467:2004; EN 14153-1/2/3:2004; and EN 14467:2004) are aimed at improving quality and safety aspects in the supply of such services. The first two specify the experience and competencies that a diving instructor has to achieve in order for the service supplier to train recreational divers. The final standard specifies more broadly the safety practices and requirements for recreational scuba diving service providers. This would also include requirements on information prior to and during service provision, procedures to be followed, risk assessment, equipment and documentation.

Mexican national standards (NOM-011-TU-2001 and NOM-011-TU-2001) specify safety requirements on the operations conducted by adventure tourism service suppliers.

Network services

A new ISO standard (ISO 14452 - Network services billing), covering consumption-based utility network services (i.e, electricity supply, gas supply, water, sanitation, district heating and sanitation) to domestic customers, aims to protect consumers by improving the transparency of billing by defining minimum requirements for the whole process. This includes pre-billing processes (such as data standards, definitions of products/services); the production of the billing document (timeliness and accuracy); as well as procedures for resolving customer complaints/queries (bill validation, reconciliation and procedures for redress). The standard specifies minimum requirements on content and principles on format rather than exact design and layout of the bill.

Medical services

Argentinian and Mexican national standards on image diagnosis (IRAM 37452) and radiotherapy services (NON-002-SSA3-2007) specify good practices for the safe supply and operation of these services, including on the equipment to be utilized.

The ASTM International standard ASTM F1517-94(2007) Standard Guide for Scope of Performance of Emergency Medical Services Ambulance Operations covers minimum standards for the performance of emergency medical services (EMS) ambulance operators, including: operator qualifications, pre-run operation, and post-run aspects. The standard promotes the safe and efficient delivery of the ambulance, equipment, crew, passengers and patients, during all phases of the delivery of emergency medical services involving the ambulance, at all times exercising the highest degree of care for the safety of the public.

Source: Technopolis, 10 November 2010, ISO Focus +, Volume 3, No.3, March 2012 and ASTM International Standards and Engineering Digital Library.

40.   Compatibility standards typically define the equipment or infrastructure to be used in the supply of that service, including its physical dimensions, technological specifications and performance characteristics. Standardized railway tracks, which allow a multitude of commercial railway operators to move their trains across borders, is one example of how technical standards can integrate separate markets and open up competition for transport services. Compatibility and interoperability standards for services could also be based on requiring that systems and processes follow a particular configuration or set-up.

41.   In financial services, for instance, technical standards used in the Single European Payments Area (SEPA) scheme have helped harmonize a multitude of national euro payment services for credit transfers and direct debits into a single format, and can be compared to implementing standardized 'railroad tracks' for the exchange of payments across the European Union. The physical characteristics and format of credit and cash cards is another example of where a standard is needed to

allow different payment and automated teller machines to interoperate and cards to be used worldwide. The dimensions of such cards are defined by the standard number BS EN ISO/IEC 7810:1996, and adherence to these requirements is virtually universal. Technical standards have long been necessary for effective postal operations and to interconnect the global postal network. The Universal Postal Union's Standards Board develops the technical standards and Electronic Data Interchange (EDI) message specifications that facilitate the exchange of operational information between national postal systems. The UPU's international addressing standard (S42), for instance, consists of: a set of postal address components used in worldwide addresses; languages for expressing address templates, i.e, formal descriptions of address formatting rules; country-specific address templates which can be easily incorporated into computer systems for managing addresses. Other similar examples of compatibility and interoperability standards can be found in road and rail transport, pipelines, energy distribution, telecommunications and audio-visual services (see Box 5 for more detailed examples).

Box 5: Examples of standards for compatibility and interoperability

Telecommunication services

ITU's Telecommunication Standardization Sector (ITU-T) produces and revises standards (ITU-T Recommendations) covering everything from core network functionality and broadband to next-generation service. Telecommunication services depend on the compatibility and interoperability of networks and voice, data or video messages. Communications cannot take place without standards linking the sender and the receiver. There are well over 3,000 Recommendations defining how telecommunication networks operate and interwork. They have a non-mandatory status until they are adopted in national laws. Levels of compliance are, however, high due to international applicability. Some examples of telecommunication technical standards are listed below:

- International country calling codes were defined by ITU-T recommendations E.123 and E.164, also called IDD (International Direct Dialing) or ISD (International Subscriber) codes. E.164 provides the structure and functionality for telephone numbers, and without it international telephone calls would not be possible.

- ASN.1 is a formal language or notation that describes data structures for representing, encoding, transmitting, and decoding data. It provides a set of formal rules for describing the structure of objects that are independent of machine-specific encoding techniques and is a precise, formal notation that removes ambiguities. ASN.1 is an extremely important part of today's networks. It is used, for example, in the signalling system (SS7) for most telephone calls, package tracking, credit card verification and digital certificates and in many of the most-used software programs.

- The Internet Protocol Television Global Standards Initiative (IPTV) is developing detailed technical standards necessary for deployment by service providers. These standards would allow the systems of different IPTV service suppliers to interoperate and provide a wide range of multimedia services such as television, video, audio, text, graphics and data to subscribers of different operators.

Financial services

The Single Euro Payments Area (SEPA) payment schemes contain sets of rules and technical standards for the execution of SEPA payment transactions that have to be followed by adhering payment service providers. These standards provide a common understanding on how to move funds from account A to account B within SEPA countries. Technical standards defined in the payment scheme would include: currency of the funds (money) exchanged; format of the account identifier; standard data formats for exchanging messages between banks; rules for 'R' transactions (refunds, returns and rejects); number of characters carried with remittance information; timelines to be observed by payment service providers when executing a payment transaction. SEPA was originally launched as a non-mandatory industry standard by the European Payments Council (EPC), a consortium of banks and bankers' associations from throughout Europe, including Switzerland. EU legislation has since been adopted which defines 1 February 2014 as the deadline in the euro area for compliance with the core provisions of this Regulation. In non-euro countries, the deadline will be 31 October 2016.

Source: European Payments Council and ITU websites.

42.   It should be noted that some standardizing bodies include management system standards as services standards. However, such standards are not specific to the service supplied but are concerned with how an organization manages its processes or activities for quality purposes, and can usually be applied to any organization, whatever its product or service. This includes how it satisfies its customers' quality requirements, or its approach to improving quality in internal operations. The ISO 9000 quality management standards, for instance, deals with the fundamentals of quality management systems and are concerned with the processes and systems adopted by an organization, not the product/service itself.

II.   DEVELOPMENT AND IMPLEMENTATION OF STANDARDS

43.   The main driver for the great majority of standards is demand by business and consumers in the face of a specific problem. A wide range of governmental, quasi-governmental or non-governmental organizations are involved in developing, issuing and promulgating technical standards. The precise steps followed in standards development may differ depending on the developer but there are some common aspects in the process.

A.   HOW AND WHERE ARE STANDARDS SET AND BY WHOM?

44.   The sections below describe the roles played by organizations at the international, regional and national level, as well as how the standards that they develop might relate to each other. Some of these organizations are horizontal in nature, in the sense that they develop standards for all sectors, while others are focused on particular sectors or fields of technology. With the integration of national economies and the expansion of trade, the role of international bodies and standards has gained prominence, and there is a trend towards greater integration of the national standardization infrastructure into the network of international standardization activity.[33] Regional bodies are also part of the standards development landscape and their role differs depending on the level of regional economic integration amongst countries.

1.   International level

45.   Standardization work often takes place in a 'technical committee', which serves as a hub where various stakeholders (e.g. producers, users, government and academia) gather to provide input as work progresses from the initial idea to published document. The degree of stakeholder and government involvement may vary according to the sector and organization concerned. This may depend not only on the standards development framework applicable to that sector but also on the type of standard being developed. It may be expected that governments are less involved in the development of standards relating to compatibility and interoperability but are more concerned with situations where market inefficiencies may potentially lead to health, safety or environmental risks.

46.   Standardizing bodies generally seek to follow the key principles of relevance, effectiveness, objectivity, openness, transparency, inclusiveness, impartiality, coherence and consensus.[34] The ISO and the IEC, for instance, have laid out in ISO/IEC Guide 59 a Code of Good Practice for Standardization. The guide deals with procedures for the development of standards, advancement of international trade, participation in the standards development process, coordination and information. The ISO has also developed a specific ISO/IEC Guide 76:2008 on the development of services standards with a focus on how to incorporate key consumer principles of safety, quality and transparency.

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[33] WTO (2005), World Trade Report 2005: Exploring the links between trade, standards and the WTO, Geneva (hereinafter referred to as WTR 2005).

[34] See principles contained in Annex B on p.46 of G/TBT/W/Rev.10.

47.   While the precise steps may differ, the standards development process usually consists of several distinct, but closely related, successive activities which begin with the identification of the need for the standard, followed by the formal establishment of a technical body involving all the interested stakeholders in the field of application to discuss the specifications of the standard. Once the standard has been drafted, members of the standards organization will then seek to adopt the standard either by consensus or by vote. If there is agreement to adopt the standard, it will usually be made available by means of publication and promotion. Figure 1 provides an illustration of how such a process is typically undertaken.

Figure 1: Typical processes involved in the development of international standards
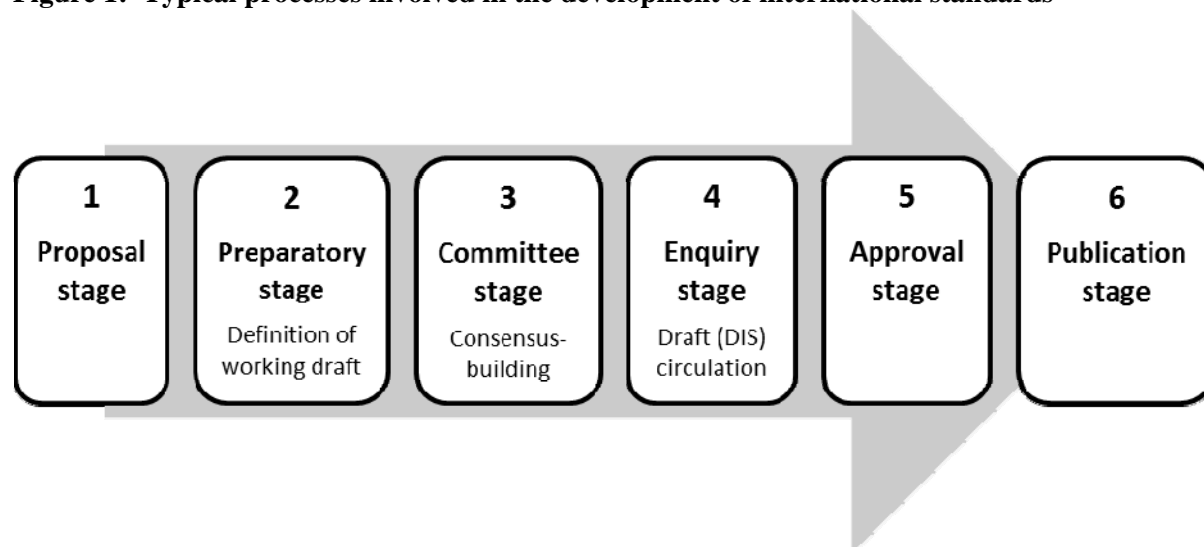
Source: International Organization for Standardization (ISO).

48.   In the initial stages (steps 1 and 2), the need for a standard is usually expressed by an industry sector. The latter proposes the new work item to the standardizing body. Once the need for an international standard has been recognized and formally agreed, the first phase involves definition of the technical scope of the future standard. This phase is usually carried out in working groups which comprise technical experts of the parties interested in the subject matter. These could include experts from business, government, academia, test and research groups, and consumer associations. Once agreement has been reached on which technical aspects are to be covered in the standard, a second phase (steps 3 and 4) is entered into during which the parties negotiate the detailed specifications within the standard. The final decision regarding adoption of the standard can be taken either by vote or by consensus. The draft international standard is then submitted to the organization's member bodies for voting and comment (stages 5 and 6) at the enquiry stage and then at the final approval stage. Depending on the voting or consensus rules of the standardizing body, the text is approved and eventually published.[35]

49.   There are many organizations which develop international standards. The World Standards Services Network lists more than 50 international standardizing bodies.[36] An illustrative list of international and regional standards organizations is provided in Annex I. The four largest of such organizations are the International Organization for Standardization (ISO), ASTM International, the International Electrotechnical Commission (IEC), and the International Telecommunication Union (ITU). These organizations essentially provide a forum for experts to discuss technical issues, build

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[35]See   descriptions   of   typical   processes   provided   on   the   ISO   website: http://www.iso.org/iso/home/standards_development.htm   and   on   the   ASTM   International   website: http://www.astm.org/ABOUT/faqs.html

[36] http://www.wssn.net/WSSN/ accessed on 30/1/2012.

consensus and agree on the best solutions for a standard. The IEC prepares and publishes international standards for all electrical, electronic and related technologies. The ITU develops standards for the information and communications technology sector with a focus on ensuring that technologies are compatible and allow for interconnection and interoperability between different networks. The ISO, on the other hand, is not confined to working in a particular technological field or industry, and develops a broad range of product, management and services standards for all fields except electrical and electronic engineering and telecommunications.

50.   The ISO, ASTM International and the IEC are non-governmental bodies, while the ITU is an intergovernmental body and part of the UN. The membership of the ISO is made up of private and public national standards bodies of 163 countries, one member per country. Each ISO member is the body most broadly representative in matters of standardization for the country and designated the national standards body (NSB). The ISO, since its creation in 1947, has published almost 20,000 international standards and standard-type documents for products and services in almost all industry sectors, as well as for a variety of cross-sector issues such as metrology and generic management systems.[37]

51.   The IEC is similarly composed of national committees, one per member economy. In some cases, the national committee to the IEC may also be the ISO member from that country or economy. ISO and IEC standards are voluntary but can become mandatory when they are adopted by legislation at the national or regional level. The local implementation of approved international standards may be done by national standard bodies, which in some cases are government bodies, while in others they are private organizations. Given that international standards are voluntary, they are often used by companies or other service suppliers not because they are mandated by regulation but rather because they can help resolve a particular problem.

52.   ASTM International, formerly known as the American Society for the Testing of Materials, provides a global forum for the development and publication of international voluntary consensus standards for materials, products, systems and services. Membership of ASTM International includes more than 30,000 technical experts from 145 countries around the world. Approximately 12,000 ASTM standards have been published.[38]

53.   The ITU, on the other hand, is a United Nations specialized agency, and its members are governments. Currently, 193 countries are ITU members, and over 700 private-sector entities and academic institutions are associated with it. The international standards developed by the ITU are referred to as 'Recommendations'. There are three sectors of the ITU which develop Recommendations, namely Radiocommunication (ITU-R), Telecommunication Standardization (ITU-T) and Telecommunication Development (ITU-D). There is no obligation on member governments to implement Recommendations and they only become mandatory when adopted as part of national law. However, since these standards have a high reputation, they tend to be implemented worldwide. Currently, there are well over 3,000 Recommendations in force covering all fundamental components of information and communication technologies (ICTs) from service definition to network architecture and security.

54.   In addition, there is a large variety of other standards organizations that also develop and publish standards for a range of international uses. These include organizations such as the Association Society of Mechanical Engineers (ASME), the Institute of Electrical and Electronics Engineers (IEEE), the Internet Engineering Task Force (IETF), the Society of Automotive Engineers International (SAE International) and the World Wide Web Consortium (W3C). Some of these

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[37] Since the 1980s, the ISO started developing generic management systems standards like ISO 9000 (quality management) and ISO 14000 (environmental management).

[38] See ASTM International, available at http://www.astm.org/ABOUT/aboutASTM.html

organizations develop standards for a wide array of materials, products, services and systems, while others, such as W3C, develop standards specifically for web development and interaction. Unlike the ISO, the IEC and the ITU, these standard making organizations are not based on the principle of one member per country. Rather, membership in such organizations is open to those interested in joining and willing to agree to the organization's by-laws.

2. Regional level

55. Standards are also set by regional bodies either with a specific sector focus or more horizontally across all sectors and industries. Horizontal regional standards organizations include the European Committee for Standardization (CEN), the African Organisation for Standardisation (ARSO), the Pan American Standards Commission (COPANT), the Arab Industrial Development and Mining Organization (AIDMO), the Pacific Area Standards Congress (PASC) and the ASEAN Consultative Committee for Standards and Quality (ACCSQ). Examples of sector focused organizations include the European Committee for Electrotechnical Standardization (CENELEC), the Interamerican Accounting Association (IFAC), the European Telecommunications Standards Institute (ETSI) and the Council of Bars and Law Societies of the European Community (CCBE). A fuller listing of regional bodies and links to their websites can be found in Annex 1.

56. Establishing a free trade area or an economic integration agreement often requires the creation of an accompanying regional or sub-regional committee to harmonize standards and conformity assessment within the region. In this regard, the European Union has gone further than any other region in terms of the development of regional standards. The Directive on Services[39] encourages the development of European standards to support the internal market and to facilitate services compatibility, quality and consumer information. Mandates have been issued by the European Commission to the CEN to develop specific standards in order to reduce the likelihood of conflicting and multiple national standards. The European standards developed by the CEN are voluntary and only become mandatory if they are referred to or are incorporated into legislative texts. Directive 98/34/EC requires member states to notify the European Commission and other members of cases where standards are being incorporated into technical regulations and adopted into national law. Despite these mandates for regional standards, services standards at the national rather than the European level (453 new national standards in 2005-2009, as opposed to 24 European ones) continue to predominate.[40] Thus, one of the reported priorities for the Commission is the extension of the European standardization system to services.[41]

57. There are also regional standardization initiatives in other regions, though they are less formally developed than the European model. For instance, the African Organisation for Standardisation (ARSO) currently has 27 member states. Its objectives include the harmonization of national and/or sub-regional standards as African Standards with a view to promoting intra-African and international trade. ARSO also seeks to coordinate participation of its members in the standard making work of international standardization organizations. The Pan American Standards Commission (COPANT), whose membership includes many countries from the Caribbean area, Central and South America, Mexico and the United States, develops a wide range of product standards and standardized test methods. The Arab Organization for Standardization and Metrology seeks to unify technical terms, methods of testing, measurements and specifications among Arab States. Examples of sub-regional organizations include the Gulf Standardization Organization (GSO), the CARICOM Regional Organisation for Standards and Quality (CROSQ) and the Mercosur Standards Association.

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[39] EU Directive on Services 2006/123.
[40] COM (3011) 311 final issued in Brussels 1 June 2011.
[41] "Single Market Act: Twelve levers to boost growth and confidence", available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011DC0206:EN:NOT

58.   Apart from the European region, few regional standards organizations actually develop new standards.[42] Most either adopt existing international standards or harmonize their established national standards with them.[43] Members of regional standards organizations are typically national standards bodies. There is a relatively close working relationship between regional and international standards organizations. For instance, the ISO's ten partner organizations come from Africa (1), the Americas (1), Asia and Pacific (2), the Commonwealth of Independent States (1) and Europe (4).[44] Many regional standards organizations have a commitment to adopt ISO/IEC international standards, whenever feasible, as the applicable national standard for their members, and to initiate the development of standards if no appropriate international standard is available for adoption.[45] For instance, CEN and CENELEC have created agreements with ISO and IEC respectively (the Vienna and Dresden agreements) in order to avoid duplication and competition.

3.   National level

59.   At the national level, standards are developed using broadly similar processes. Usually it commences with the identification of the need for a standard by a stakeholder. The national standards body usually consults with the business sector, consumer groups, government agencies, etc. Some standardizing bodies have a formal consultation process others may also accept unsolicited proposals for the preparation of a new standard or the amendment of an existing one. The body would then undertake some screening of the proposal to see if it is, indeed, justified. This could involve an assessment of existing published standards or work in progress within international, regional or national bodies. Should another international or other standard exist, the body would usually decide whether that standard could be adopted as the national standard, or modified in some way. Should any modification or development work be required, this would typically be undertaken in a technical committee. The draft prepared by the technical committee is usually widely circulated so as to inform interested parties, and comments are invited. Following this consultation process, the final version of the draft is then submitted to the organization's decision making body for approval either by voting or by consensus. Should the draft be approved, it becomes a national standard which is usually published for sale.

60.   To understand how the standards development framework is organized at the national level, it is important to distinguish between the roles of a national standards body (NSB) and other standardizing bodies. The term national standards body is generally used to refer to the body which is formally recognized as representing the country at the international level and who has the responsibility for setting national standards. 'Standards developing organizations' is a more generic term and concept, and is generally used to refer to any organization which develops and publishes industry specific standards. Some economies feature only one national standards body with no other standardizing bodies, while other countries may have several hundred bodies, which are coordinated by an apex or peak organization.

61.   Most developing countries, for instance, have a single recognized NSB, which is likely to be the sole member from that country in an international standardizing body. The main functions of this body will typically include: preparation and promulgation of national standards; promotion of the implementation of standards by industry; certification of products; provision of information on

[42] UNIDO/ISO (2008), "Fast forward: National Standards Bodies in Developing Countries", Geneva.
[43] *Ibid*.
[44] WTR 2005.
[45] WTR 2005.

standards and related technical matters with regard to both national and international standards; and country representation in international activities and at forums that deal with standards.[46]

62.   The North American model for standards development, on the other hand, is markedly decentralized with over 600 organizations reported to be involved in developing standards. Many of these bodies are in the private sector and co-exist with numerous regulatory agencies. In the US alone, there are over 400 separate standardizing bodies. The American National Standards Institute (ANSI) fulfils a coordinating and accrediting role nationally, and represents the US in international forums. In the Canadian system, both the private sector and the Government are involved in standard setting.

63.   In Europe, standards development has traditionally been much more centralized, with an emphasis on the harmonization of standards of EU Members (see discussion of the role of CEN above). There are also a variety of approaches at the national level in Europe. In some cases, all or part of the activity relating to the development of national standards is delegated to specialist sectoral trade associations, while in other systems the different sectors are managed under one organization.[47]

64.   In general, the level of market development in an economy has an impact on the number of standards produced nationally. Developed markets tend to be more active in standardization than developing markets, often because the demand for standardization increases with the level of prevailing scientific, business and technical capacity, the level of industrialization, the degree of economic diversity, the importance of global markets and the evolution of domestic consumer needs.[48] It is also a reflection of the fact that the relevant national authorities and the private sector in developing and less developed economies may lack the resources and technical knowledge required to develop standards.

65.   Given that national standardization systems differ significantly with regard to their degree of centralization, formalization and involvement of the government, it is difficult to describe a single approach or process. Comparable cross-country information on national standards systems is also limited. Nevertheless, the various national approaches could be described in terms of three main models. These approaches are illustrated in Figure 2.[49] Type 1, which is the 'traditional approach' to standard setting, is based upon a highly centralized process with a single government agency, parastatal or autonomous statutory body with the responsibility for developing standards. Under this approach, there is usually little or no involvement of the private sector, and standards are usually specified in relevant regulations and are therefore mandatory.

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[46] UNIDO (2006), "Role of standards: A guide for small and medium sized enterprises", Working paper, p. 9.
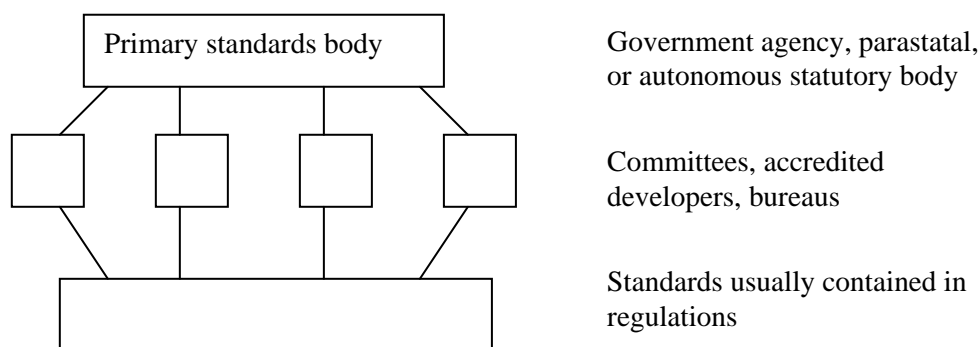
[47] See UNIDO/ISO (2008) for description of activities and structure of national standards bodies.

[48] Henson, S, (2004), "Standards and Trade: An Overview", mimeo, Guelph, Ontario, University of Guelph.
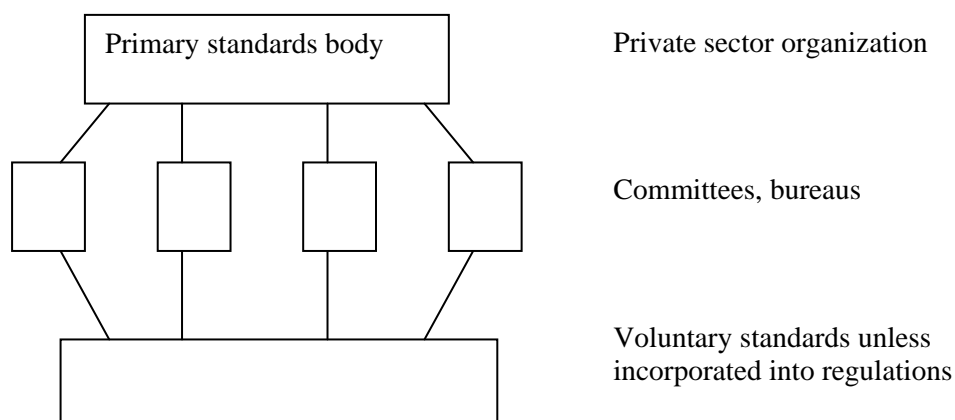
[49] Reproduced from WTR 2005.

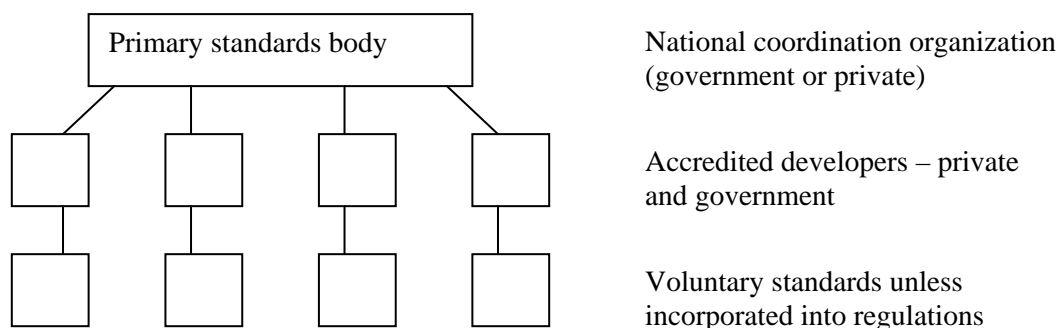**Figure 2: Alternative national approaches to standards development**

Type 1

Primary standards body	Government agency, parastatal, or autonomous statutory body
	Committees, accredited developers, bureaus
	Standards usually contained in regulations

Type 2

Primary standards body	Private sector organization
	Committees, bureaus
	Voluntary standards unless incorporated into regulations

Type 3

Primary standards body	National coordination organization (government or private)
	Accredited developers – private and government
	Voluntary standards unless incorporated into regulations

Source: Adapted from R.B. Toth Associates, in Stephenson (1997).

66.   This can be contrasted with the so-called 'new approach' to standardization, which is being promoted especially in the European region, where private sector organizations often play a significant, if not leading, role in standard setting activities. Types 2 and 3 describe varying degrees of private involvement in developing standards. Under this approach, standards are usually developed in response to a problem that has arisen in business, and the role of the government may vary. In such situations, alignment or compliance with international norms tends to be a prevalent feature of the standard, and the focus is on addressing specific concerns of industry and commerce.[50] Often the standards are voluntary and would only be mandatory if incorporated into regulations.

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[50] WTR 2005.

4. Vertical and horizontal integration in standards setting

67.   Standards are drawn up at the national, regional and international levels with different degrees of integration. In some cases, there is a strong degree of 'vertical' integration between national, regional and international standards, whereas in others it might be less so. A second consideration is the degree of 'horizontal' integration between the various organizations involved in developing standards. In some countries, the standardizing process is highly centralized at the national level, with only one single body in charge of developing both standards and technical regulations. In other countries, a large number of organizations with the participation of various stakeholders, such as consumers and producers, are involved in the development and publication of standards.

68.   Usually when the national standard making process is highly centralized, a characteristic of countries with a centrally controlled economy, standards are often found in the relevant regulations for that product, service or industry. In less centralized standard making systems, standards have tended to be voluntary, and would only become mandatory if referred to or incorporated into technical rules and regulations.[51]

Box 6: Examples of 'vertical' and 'horizontal' integration in standards development

A. Unique strategy for 'vertical integration' of standards at the regional level
The European Committee for Standardization (CEN) has a unique mandate in which it plans, drafts and adopts European Standards (ENs) which are considered national standards in each of its 32 member countries.[52] In the areas where ENs have been developed, every conflicting national standard has to be withdrawn. Under this strategy, until the end of 2011, CEN published 85 standards and specifications that relate directly to services sectors, *inter alia*, tourism[53], transport[54], postal services[55], and other business sectors like: translation services[56], airport and aviation security services[57], furniture removal[58], real estate agents[59], etc.

B. Public–Private Synergies to develop 'horizontally integrated' standards at the national level
The US National Technology Transfer and Advancement Act (Public Law 104-113) fosters a strong public-private partnership. It coordinates the use of private sector standards as a means of carrying out policy objectives or government activities. Federal agencies and departments are required to use technical standards that are developed or adopted by voluntary consensus standards bodies, except where they are inconsistent with law or otherwise impractical. This gives a strong public-private partnership approach to standards.

Source: European Committee for Standardization (CEN) and American National Standard Institute (ANSI).

5. Standard-setting and capacity issues

69.   It is well recognized that the demand for standards and the capacity to develop and implement them depend to a large extent on factors correlated to a country's level of development. Establishing

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[51] WTR 2005.

[52] CEN Members are EU 27 countries, Croatia, Turkey, Iceland, Norway and Switzerland.

[53] European Standard EN 14467:24 sets requirements for recreation scuba diving service providers; EN 14153-1/2/3 sets safety-related minimum requirements for the training of recreation scuba divers; EN ISO 18513:2003 contains hotel and other types of tourism accommodation terminology.

[54] European Standard for public passenger transport services (EN 13816:2002) sets out common criteria for evaluating the quality of these services, covering a wide range of aspects such as accessibility, cleanliness, punctuality and the provision of information to passengers.

[55] DIN EN 13850: 2007-06 Measurement of transit time of end-to-end services for single piece priority mail and first class mail.

[56] European Standard EN 15038:2006.

[57] European Standard EN 16082:2010.

[58] European Standard EN 12522:1998.

[59] European Standard EN 15733:2009.

the standards development infrastructure is costly and, unless supported by an active private sector, much of that burden will have to be borne by the government. In some cases, implementing and enforcing international standards may require technical and financial resources beyond the capabilities of developing countries. On the other hand, implementation of international standards may improve the access of service suppliers to distribution channels and information networks, and facilitate their participation in world trade.

70.   That being said a vital consideration will be the level at which the standard has been set, which is in turn linked to the ability of standardizing bodies from economies at different levels of development to actively participate in the work of international standardizing bodies. In the context of discussions undertaken in the TBT Committee, a survey found that 30 per cent of replies indicated a need to facilitate the participation of developing countries in the work of international standard setting bodies.[60] This survey correlates with earlier findings by the ISO of a study conducted in 2002 of problems faced by standardizers in developing countries.[61] The study found that in 70 per cent of the respondent countries, more than half the standards were not based on international standards. Participation in international standardization work was low, with 42 per cent of respondent countries not registered as members of any ISO technical committee, and 52 per cent not having attended any meetings of these bodies in the last two years. The main reasons given for low participation were the lack of funds, awareness and expertise in standardization at both industry and standardizing body level.

71.   Recognizing these challenges, the TBT Agreement, for instance, eases the impact of certain provisions whose full application would not be compatible with developing country Members' development, financial and trade needs. Moreover, in view of their particular technological and socio-economic conditions, developing country Members may adopt technical regulations, standards or test methods aimed at preserving indigenous technologies and production methods and processes compatible with their development needs. Finally, developing country Members may request international standardizing bodies to examine the possibility of and, if practicable, prepare international standards for products of special trade interest to them.

72.   Numerous initiatives, albeit not focused on services, have also been undertaken to improve the ability of developing countries to meet standards. Most notable of these initiatives has been in the area of sanitary and phytosanitary measures, where a Standards and Trade Development Facility was established by five partner organizations[62] to support developing countries in their capacity to implement international standards, guidelines and recommendations in this area.

73.   It is likely that the challenges faced by standardizers in developing countries in the area of TBT and SPS would extend also to services, as national standards bodies are not organized on a sectoral basis. At the same time, it is also well recognized that international standards, provided that they are appropriately designed, can play a vital role in facilitating international trade as they define the characteristics that products and services have to meet in other markets. The harmonization brought about by international standards may result in cost savings, as producers and service providers do not have to create different processes to meet varying standards.

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[60] G/TBT/W/193, 10 February 2003.

[61] El-Tawil, A (2002), "An in-depth study of the problems faced by the standardizers and other stake-holders from developing countries", ISO/WTO Regional Workshops - Part 1.

[62] Food and Agricultural Organization, World Organization for Animal Health, World Health Organization, World Bank and World Trade Organization.

B.   CONFORMITY ASSESSMENT

74.   To complete the description of the standards framework it is necessary to discuss the role of conformity assessment.   At its simplest, conformity assessment seeks to establish that the requirements contained in either a standard, regulation or other form of specification have been met. It can also be a way for providers to assure consumers in other markets that their services meet an internationally recognized standard.   The conformity assessment process would usually consist of: sample testing; inspection; process evaluation; supplier's declaration of conformity; management system certification/registration; personnel certification; product certification; mutual recognition of results; and the accreditation and peer assessment of the competence of the organizations conducting these activities.

75.   In general, the processes for conformity assessment and the actors involved are the same for goods and services.   However, many of the tools used in assessing product conformity cannot be easily applied to services.   A service does not often have physical properties and thus cannot be tested in a laboratory for its physical or performance qualities in the same way that a good can.   Thus, more often than not, conformity assessment of services standards will involve an assessment of the type of equipment used, the facilities in which the service is undertaken, the quality/skill levels of the service supplier, the processes established for the conduct of the service, as well as the information provided to the consumer.   In short, conformity assessment in services will be especially focused on the process by which the service is supplied as well as the inputs that are required for its performance rather than on testing of the service itself.   This may require an overall audit of the service supplier and its operations against established criteria.

76.   Conformity assessment is typically undertaken either by the supplier or consumers of the product/service, or by regulatory bodies if the standards have been incorporated into legislation. There are also many testing and certification bodies which offer independent conformity assessment services.   The latter include: laboratories and inspection bodies which test and measure samples or items using scientific methods to determine particular characteristics and/or compliance with standards or specifications; systems certification bodies which certify organizations for compliance with management systems standards, such as those on quality and environmental management; and product certification bodies which certify that certain marks can be used by organizations to indicate that products comply with particular standards or specifications.

77.   The parties to a transaction for which conformity is either claimed or required are described as: first party - the supplier or manufacturer of the product or service (the party that claims conformity); second party - the purchaser, or the party receiving the product or service (the party that requires conformity); and third party - an independent party unrelated to the transaction who undertakes an assessment of conformity, or otherwise.

78.   Whether first party or third party conformity is accepted or required often varies according to the nature of the transaction and the risks posed by mistakes.   When standards are voluntary, the supplier of the service may typically make a self-assessment of compliance with the requirements set, and provide this information to the consumer.   The declaration may have a specific format mandated by law in order to ensure that the consumer has legal recourse to product/service liability laws. Declarations by a supplier are not normally admissible in areas where non-conformance may pose serious health, safety or environmental risks.   In such cases, regulations may require that a mandatory conformity assessment or certification be undertaken by an independent party.

79.   Certification goes beyond testing and inspection in several respects.   Processes or product/service characteristics are assessed against a specific standard, whether voluntary or required by regulation, and a formal attestation (or certificate) is issued when the product meets the required criteria.   This is particularly important when the seller or buyer wishes to communicate compliance

with a standard to the larger public or governmental authorities. Certification institutions are characterized by the fact that they typically employ not only their own technical facilities but also the services of external laboratories and inspection resources. They also provide for on-going surveillance and, if deficiencies are uncovered, may revoke their certificate/mark. Aside from certifying product/service characteristics, certain bodies also attest to the conformity of systems, for example, an organization quality management system to the relevant model of the ISO 9000 series of management standards. This activity is referred to as quality system "registration".

80.   Accreditation bodies, in turn, have the role of certifying the competence and independence of bodies conducting conformity of a product/service to a particular standard. Accreditation bodies also need to demonstrate that they are independent and unbiased, and for this reason are often established as entities that are run or authorised by the government. In practice, conformity assessment which is undertaken in one country, even by a third party, is not always automatically accepted by others. Confidence in the work of conformity assessment bodies in other countries often needs to be established through multilateral co-operation. To that end, a variety of international and regional forums have been established, most notably at the accreditation level. Their main objective is to facilitate mutual recognition agreements (MRAs) between members, i.e, the acceptance of conformity assessment results obtained by foreign bodies. To this end, international standards/guides on conformity assessment have been developed, most notably by the ISO Committee on Conformity Assessment (CASCO) in conjunction with representatives of the IEC. These principles are largely process-oriented. Figure 3 shows the relationship between standards development, conformity assessment and accreditation.

Figure 3: Relationship between standardization, conformity assessment and accreditation
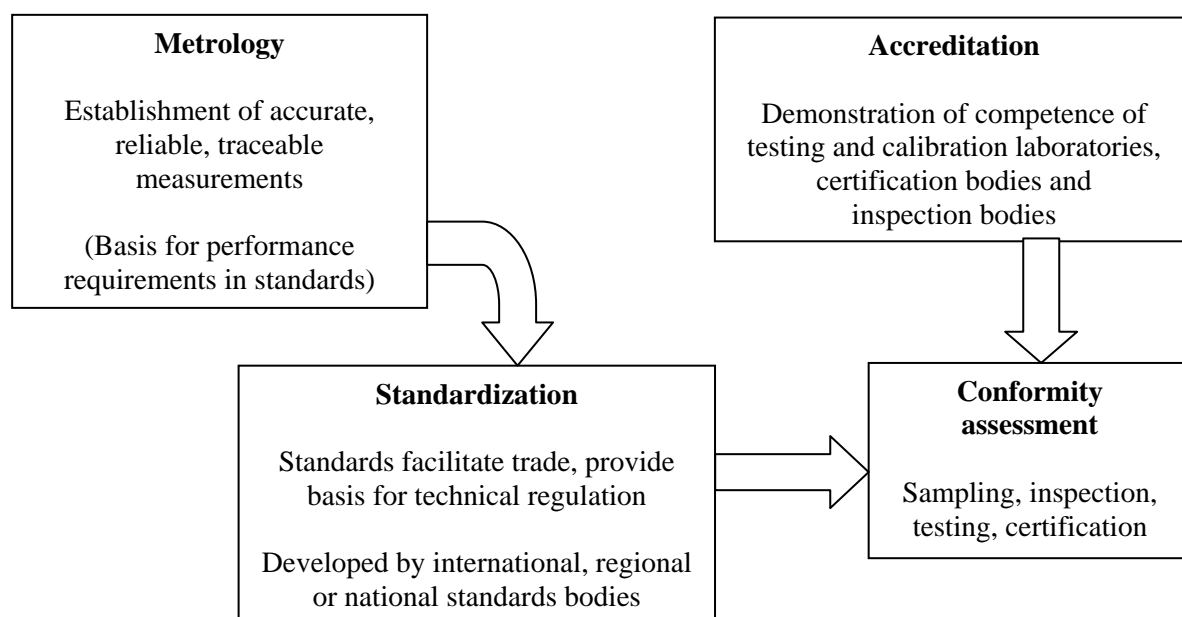
Source: Adapted from UNIDO/ISO (2008), Fast forward: National Standards Bodies in Developing Countries, p.11

81.   An example of how conformity assessment might be undertaken for a service is provided in Box 7.

Box 7: Conformity assessment procedure for EN 15038 - Translation Services - Service Requirements

EN 15038 is the European standard for translation services which is applicable to translation service providers (TSP) of all sizes and types throughout the world. Its primary objective is to "establish and define the requirements for the provision of quality service for translation" and, as such, serves as a benchmark for quality and consistency of service.

The standard was first proposed by the European Union of Associations of Translation Companies (EUATC) to enable the translation industry to be on an equal footing with other industries which already work to standards. It also provided an indicator of good practice allowing clients to evaluate different levels of conformity by TSPs.

EUATC proposed two ways by which a TSP can demonstrate compliance with the standard:

    (i)   'Third party' independent conformity assessment

        The TSP puts in place the required procedures and processes, and then submits to an audit by a third party. To provide full assurance, the third party should be a certification body that has itself been audited by an accreditation body and assessed to be competent against the EN 45011 standard in providing certification against product (including service) standards. The accredited auditing company verifies that the TSP has understood the requirements, put in place the relevant detailed processes and procedures, including quality system aspects, and that the system complies with the requirements of EN 15038. If the audit is successful, certification is given for a limited period, and its continuation or renewal is subject to follow-up audits at specified intervals. The TSP can thereafter carry the logo of a third-party certification body. According to EUATC this is more expensive than any other mode of demonstrating conformity to the standard but provides a high level of assurance.

    (ii)   'First party' self-declaration

        The TSP, after putting in place the processes required by the standard, self-declares that it is in conformity. That declaration can be done/substantiated in several ways: (a) an independent third party is engaged to carry out the assessment, make its declaration of conformity on the basis of that report which will also be prime evidence for a declaration in conformity with ISO/IEC 17050 Parts 1 and 2 (Conformity assessment - supplier's assessment of conformity); (b) the TSP can carry out its own assessment of conformity to the standard, obtain, read and meet the requirements of the ISO/IEC 17050 standard Parts 1 and 2; or (c) the TSP can carry out its own assessment of conformity to the standard, decide that it does conform and make the declaration itself.

Source: European Union of Associations of Transatlantic Companies, available at:
http://euatc.org/index.php?option=com_content&task=view&id=21&Itemid=42

82.   Conformity assessment procedures have tremendous importance for international trade which is why trade agreements typically require that they be transparent and non-discriminatory. Often these rules arose as a response to the growing complexity of conformity assessment systems for product certification and quality assurance, which can sometimes impose duplicative or discriminatory requirements. The TBT Agreement, for instance, in essence lays down detailed rules which require Members to accord access to the relevant procedures to third country suppliers of like products on a non-discriminatory basis (Article 5.1.1). Furthermore, the procedures themselves should not become unnecessary trade obstacles, meaning that they shall not be stricter or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards, taking account of the risks non-conformity would create (Article 5.1.2).

83.   In many cases, conformity assessment activities in developing countries are generally less developed that in their industrialized counterparts. Without significant private sector involvement, the costs of establishing the relevant infrastructure may be prohibitively high for governments. Producers and suppliers may also have less experience with conformity assessment procedures, as these are not practiced in their home market or the costs of obtaining certification may be very high. In the context

of the TBT Agreement, there are various provisions which provide for technical assistance (Article 11) and special and differential treatment (Article 12).

84.   Members are also encouraged by the TBT Agreement to enter into negotiations on mutual recognition for conformity assessment and on acceptance of the results of conformity assessment procedures in other Members whenever possible, provided that such procedures are considered adequate and offer an assurance of conformity equivalent to their own procedures (Article 6). Although not specific to conformity assessment, Article VII of the GATS also provides the possibility to Members to accord recognition for the purposes of the fulfilment, in whole or in part, of its standards or criteria for the authorization, licensing or certification of service suppliers.

85.   Given that most of the experience with conformity assessment has been with respect to products, the question arises as to whether similar issues exist in the field of services, and if they would prove just as inhibiting of trade. It is beyond the scope of this Note to address this subject, as much work would still be needed to understand what are the various procedures being used in different service sectors to assess conformity. In the case of accountancy services, for instance, the assessment of the conformity to the service or of the service supplier with established standards is generally not performed on an *a priori* basis by any authority. Rather, the point of control for conformity would be in the qualification framework, which would include the administrative, procedural and substantive requirements to be met. Thereafter, it is the accountant who would typically self-declare that the service complies with the requisite standards and regulations. Whenever checks are implemented, they occur *a posteriori*, and are conducted by the relevant professional bodies which, as part of their remit, often monitor the quality with which members perform their work, including adherence to standards. While similarities are likely to exist for other regulated professions, it cannot, of course, be assumed that this would be the case for other service sectors.

III.   SUMMARY AND CONCLUDING OBSERVATIONS

86.   The purpose of this Note has been to provide background information on technical standards as they apply to services. It has sought to explain the role of standards and the standards development process, and has provided a number of examples of technical standards for services. Given the purpose of this Note, which was requested to help inform Members of how technical standards are developed for services, it does not seek to draw any particular conclusions. It is envisaged that, in any ensuing discussions, Members would complement the information provided in the Note with their own specific experiences, as appropriate. To assist further discussions, some general observations based on the foregoing appear pertinent:

(a)   There is little or no distinction in the processes followed by standardizing bodies when developing product or services-specific standards. In very many cases, 'standards' are distinguished from 'regulations'. The majority of standards are designed for voluntary use, in the sense that they are offered for adoption by standards developing organizations or industry without being mandated by law. It is only when observance of a particular standard is required by law that such standards become mandatory, and then only within the jurisdiction covered by the legislation. Usually, this is done by incorporation or by reference in the relevant act or rule. The reasons for why certain standards will be incorporated into regulation will vary from country to country. However, in general, an important consideration will be the risks of compromising any societal interests (e.g. public safety, health and environment) which would justify the imposition of regulatory requirements. Depending on the regulatory approach of the country, in principle, the greater the risk, the more likely standards will be implemented as mandatory requirements. In principle, it follows that the sectors where the risks are assessed to be high will be where such requirements can be expected to be prevalent.

(b)   There is great diversity in how the standards development infrastructure is organized at the national level. Very generally, there are three main models which are followed. The first is where standards development is highly centralized and national standards can only be issued by a designated national standards body. This body is usually a government entity and standards are often, though not always, synonymous with mandatory regulations. The second are hybrid arrangements where the national standards body is either a designated non-governmental or quasi-governmental body. The third is where standards are primarily a private sector-driven activity with many organizations involved in their development, with little or no direct governmental participation. In the latter two models, standards do not tend to be mandatory but can be incorporated into, or made the basis of, regulations.

(c)   Technical standards in services, as with certain product standards, tend to be performance/process-related as they specify the manner by which the service is to be produced or supplied, such as the design of the process, the protocols followed, the actual conditions under which the service is performed, as well as the equipment/technology which is to be utilized. Standardization of the service based on its physical dimensions or material content is, however, rarely feasible and many of the methods used in product standards cannot be used. Standards are also used to define the terminology that can be used to describe a particular product or service.

(d)   Conformity assessments of quality and fitness for purpose, for instance, will be different for services as compared to goods. Unlike a physical product, a service cannot easily be subjected to a laboratory test to see whether it contains particular materials or performs in a certain way. Thus, greater emphasis has traditionally been given to assessing the competence of the service supplier and the satisfaction of customers. Both are indirect means of controlling for quality, as the former relies on there being a positive link between the qualifications of the service supplier and the service supplied, while the latter can only assess outcomes. It also suggests that, in services, there is a close relationship between qualification requirements and services standards. Indeed, in many cases, the standard will specify requirements on the qualifications to be possessed by the service supplier. Conformity assessment in services also tends to be on the process by which the service is supplied, as well as the inputs that are required for its performance, rather than on testing of the service itself.

(e)   International standards bodies are increasingly involved in developing services-specific standards though these appear to be far less numerous than product standards. However, there are important sectoral specificities that need to be taken into account. For certain sectors, such as telecoms, postal, transport and financial services, international standards have long been required for the compatibility and interoperability of systems and protocols. For these and other sectors, implementation of international standards may reduce transaction costs and improve the access of service suppliers to distribution channels and information networks, and facilitate their participation in world trade. However, it is also generally well recognized that participation in standard making at the international level is costly, and developing countries face particular capacity constraints. Active participation is an important factor in the establishment of appropriate standards.

(f)   Under the TBT Agreement, there is a clear distinction between 'standards' as voluntary and 'technical regulations' as mandatory, with differing sets of obligations on Members. Currently, no such distinction is made in the GATS. However, it is important to recall that Article I of the GATS provides that the Agreement "applies to measures by Members affecting trade in services". It further provides in Article I:3(a) that "measures by Members" means measures taken by: "(i) central, regional or local governments and authorities; and (ii) non-governmental bodies in the exercise of powers delegated by central, regional or local governments or authorities". The issue of delegated powers would appear relevant to

standardizing bodies, some of which, although non-governmental, are formally authorized to exercise such powers. The term 'measure' is, in turn, defined in Article XXVIII as meaning "any measure by a Member, whether in the form of a law, regulation, rule, procedure, decision, administrative action, or any other form". The form which a measure might take is not exhaustively listed. Thus, in terms of assessing whether a technical standard would fall under the scope of the GATS, there would appear to be two cumulative factors to consider. Firstly, is it a 'measure by a Member' in the sense of Article I:3(a)? Secondly, does it 'affect trade in services'? Should the answer to both questions be affirmative, the standard in question, be it voluntary or otherwise, could fall within the scope of the GATS. A separate issue would then arise as to what domestic regulation disciplines could apply. Given that this issue is the subject of negotiations by Members under the mandate of Article VI:4, it is outside the purview of this Note. The scope of any eventual discipline on technical standards would nevertheless have to be read according to the scope of the Agreement as provided for in Article I.

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ANNEX I

<u>Illustrative List of Horizontal and Sectoral Standardizing Bodies</u>

SECTOR	INTERNATIONAL	WEBSITE	REGIONAL	WEBSITE
Horizontal	International Organization for Standardization (ISO) ASTM International, formerly known as American Society for Testing and Materials (ASTM) The World Wide Web Consortium (W3C)	http://www.iso.org/ http://www.astm.org/ http://www.w3.org/	African Organisation for Standardisation (ARSO) Arab Industrial Development and Mining Organization (AIDMO) Pacific Area Standards Congress (PASC) ASEAN Consultative Committee for Standards and Quality (ACCSQ) Euro-Asian Interstate Council for Standardization, Metrology and Certification European Committee for Standardization (CEN) <u>Sub-regional</u> MERCOSUR Standardization Association (AMN), CARICOM Regional Organisation for Standards and Quality (CROSQ) EAC East Africa Standards Committee Gulf Standardization Organization for GCC Arab Countries.	http://www.arso-oran.org/ http://www.aidmo.org/ http://www.pascnet.org/ http://www.aseansec.org/4951.htm http://www.easc.org.by/index_en.php http://www.cen.eu/ http://www.amn.org.br/en/# http://crosq.org/ http://www.eac.int/
Legal Services	International Bar Association (IBA)	http://www.ibanet.org/	Council of Bars and Law Societies of the European Community (CCBE)	http://www.ccbe.eu/index.php?id=32&L=0

SECTOR	INTERNATIONAL	WEBSITE	REGIONAL	WEBSITE
Accounting Services	International Federation of Accountants (IFAC) International Organization of Securities Commissions (IOSCO) International Accounting Standards Board (IASB)	http://www.ifac.org/ http://www.iosco.org/ http://www.ifrs.org	Confederation of Asian and Pacific Accountants (CAPA) Eastern Central and Southern African Federation of Accountants Fédération des Experts Comptables Européens (FEE) Interamerican Accounting Association (IFAC)	http://www.capa.com.my/ http://www.ecsafa.org/ http://www.fee.be/ http://www.ifac.org/about-ifac
Architectural Services	Union Internationale des Architectes (UIA)	http://www.uia-architectes.org/		
Engineering Services	Institute of Electrical and Electronics Engineers (IEEE)	http://www.ieee.org/		
Medical Services	World Health Organization (WHO)	http://www.who.int/		
Veterinary Services	World Organisation for Animal Health: OIE Terrestrial Animal Health Code	http://www.oie.int/international-standard-setting/terrestrial-code/		
Energy Services	International Electrotechnical Commission (IEC) International Atomic Energy Agency (IAEA)	http://www.iec.ch/ http://www.iaea.org/ and http://www-ns.iaea.org/standards/default.asp?s=11&l=90	European Committee for electrotechnical standardization (CENELEC)	http://www.cenelec.eu/aboutcenelec/whoweare/index.html
Postal Services	Universal Postal Union (UPU)	http://www.upu.int/en/activities/standards/about-standards.html		

SECTOR	INTERNATIONAL	WEBSITE	REGIONAL	WEBSITE
Telecommun-ication Services	International Telecommunication Union (ITU)	http://www.itu.int/	European Telecommunications Standards Institute (ETSI) Asia-Pacific Telecommunity (APT)	http://www.etsi.org/ http://www.apt.int/APT-Objectives
Higher education services	UNESCO	http://www.unesco.org/	European Higher Education Area	http://www.ehea.info/
Financial services	Basle Committee on Banking Supervision (prudential standards)	http://www.bis.org/bcbs/basel3.htm	European Supervisory Authorities (ESAs): • European Securities and Markets Authority (ESMA); • European Banking Authority (EBA); • European Insurance and Occupational Pensions Authority (EIOPA). Islamic Financial Services Board (IFSB)	http://www.fsa.gov.uk/pages/About/What/International/european/esas/index.shtml http://www.esma.europa.eu/ http://www.eba.europa.eu/ https://eiopa.europa.eu/ http://www.ifsb.org/
Tourism	World Tourism Organization: Code of Ethics	http://unwto.org/en/content/about-unwto		
Maritime Transport Services	International Maritime Organization (IMO)	http://www.imo.org/		
Air Transport Services	International Civil Aviation Organization (ICAO) International Air Transport Association (IATA)	http://www.icao.int/ http://www.iata.org/	European Aviation Safety Agency (EASA)	http://www.easa.eu.int/flightstandards/

SECTOR	INTERNATIONAL	WEBSITE	REGIONAL	WEBSITE
Rail Transport Services	International Union of Railways Intergovernmental Organisation for International Carriage by Rail	http://www.uic.org/spip.php?article528&lang=en http://www.otif.org/	The Association of the European Rail Industry (UNIFE) owns and manages the International Railway Industry Standard (IRIS)	http://www.unife.org/page.asp?pid=2 http://www.iris-rail.org
Road Transport Services	International Road Transport Union (IRU) UN Economic Commission for Europe (UNECE)	http://www.iru.org/ http://www.unece.org/trans/main/welcwp1.html		

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