

Critical issues in ICT Standardization

**Discussion Paper from the ICT Focus Group for further consideration
by ICT Standards Board member organisations**

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Section one: Introduction

If it could be measured in terms of its cost to industry, or its overall economic benefits, ICT standardization would display an impressive set of figures. The extent of the overall activity is poorly understood by those outside standardization, only critical developments in key areas tend to figure, mainly in the technical press rather than in the economic and financial media. Often, coverage is negative – much of the publicity relates to “standards wars” on particular issues, rather than the substantial achievements of standardization.

Coupled with this overall lack of awareness of the importance of ICT standards is a lack of understanding of the nature of the system – what standardization bodies are, what they actually deal with, how they work. As the ICT standards scene has become more complex, with a multiplicity of different bodies, and types of body, and also given the increasing importance of inter-connectivity, it has become more important to try to develop this understanding, but it has become more and more difficult to do so.

The ICTSB decided to launch an internal “focus group” to consider some of these critical issues in ICT Standardisation. This report reflects a collection of ideas developed within this focus group and is present as a working paper to provoke further discussion within ICTSB member organisations.

The Focus Group at the outset decided to divide the issues into four main categories:

1. Structure and organization of ICT standardization at global and regional level, etc.;
2. The role of public authorities in ICT standardization, including Government as Regulator, enforcer and major procurer;
3. The economics of ICT standardization, including educational, promotional and awareness issues;
4. Role/benefit of the end user.

Section two: Some definitions

Outside the standards environment itself, the word “standard” has quite a favourable image in English – for example, something well carried out “sets the standard” for others to achieve.

Inside the standards environment, those active in traditional standardization still have the view that only formal standards from ISO, IEC, ITU and UN/ECE globally, from CEN, CENELEC or ETSI in Europe, or from national bodies, are worthy to be called “standards”, thus equating “standard” with “norm” – languages other than English commonly make such a distinction.

On the other hand, in ICT standardization, this special status for the word “standard” has in effect broken down completely – a “standard” means on the whole some kind of a document produced through a consensus-based process (as defined by the responsible authoring body, i.e. the term “consensus” may express different means of decision-making).

However, there are some formal definitions and some less formal conventions, and it is worth giving some of these as a background to the present report, though some have been adapted for the purpose of this report and therefore constitute “working definitions”. It would be worth further work to improve this overall set of definitions – to “provide a standard for standards” that goes further than the ISO definition below, and – maybe even more useful, to provide criteria for organizations developing standards, to try to encourage them to adopt them as best practice.

The following list is in alphabetical order.

➤ **Consumer**

Means any natural person who uses or requests a publicly available electronic communications service for purposes which are outside his or her trade, business or profession.

➤ ***De facto* standards**

A *de facto* standard is widely accepted and used in practice by related users and actors on the market.

➤ **End-user**

Means a user not providing ICT services as such, but using ICT products and services.

➤ **Formal standards**

For the purpose of this report, one coming from a formally recognized body, sometimes referred to as *de jure* standards. However, the formal standards bodies also provide consensus publications that have not passed through a “full” consensus process (in Europe the so-called “new deliverables”).

➤ **Formally recognised body**

Easy in the context of Europe, in the sense that the EU and EFTA “recognise” the three European Standards Organizations.

➤ **Industry standards**

This is a term often used by companies. We have not found any proposed definitions such as those existing for “open standards”. Typically, its use tends to infer that the “market players” in industry have provided the standards, as opposed to those provided by regulators, or the wider process of formal standardization.

➤ **Information and Communications Technologies (ICT)**

For the purposes of this text, ICT includes the convergence of the information technology, telecommunications, broadcasting, content, consumer electronics and other domains.

➤ **Open standards**

This is a term in very wide use currently, but one that seems to attract confused discussion.

One dictionary definition is that open standards are “*publicly available [specifications](#) for achieving a specific task. By allowing anyone to use the standard, they increase [compatibility](#) between various [hardware](#) and [software](#) components since anyone with the technical know-how and the necessary equipment to implement [solutions](#) can build something that works together with those of other vendors*”. (from <http://www.webster-dictionary.org/definition/Open%20standard>).

This appears to be a reasonable general definition, however, the commentary on page 9 below may be more comprehensive and includes information concerning the process by which they are drawn up. However, in the absence of any formal definitions, there are some players out there who are still confusing “open standard” with “open source”. Others (Perens, Krechmer) have attempted to define criteria for a standard to be an “open” one, somewhat neglecting the fact that individual consortia operate on very different lines. It is not immediately apparent what is the advantage of the use of the adjective “open” compared with the ISO definition (which certainly is not confined to formal ISO, etc. standards).

➤ **Proprietary standards**

Proprietary standards are a set of requirements and specifications that are established and asserted through a closed process, typically performed by a single company or closed consortium rather than an open standards body.

➤ **ISO and IEC Standards – ISO/IEC definition**

“Document, established by consensus and approved by a recognised body, that provides, for common and repeated use, guidelines, or definitions of characteristics, for activities or their results, aimed at the achievement of the optimum degree of order in a given context” [ISO/IEC Guide 2:1996].

➤ **Standards Setting Organization**

For the purposes of this report, the term “Standards Setting Organization” (SSO) has been used where appropriate. This encompasses the full range of organizations involved in making standards, including the formal bodies and consortia and fora.

➤ **User**

This means a legal entity or natural person using or requesting ICT products and services.

The **World Trade Organization** has published a standards code as part of the TBT Agreement. Relevant extracts from the TBT Agreement are reproduced in **Annex A**. The standards code itself is Annex 3 to the TBT Agreement.

However, the only standards organizations currently having registered as complying with the code are ISO and IEC and their national members, together with the three European Standards Organizations (ESOs).

Section three: General considerations

As noted in the introduction, the ICT standards scene is characterised by a large number of standards bodies and indeed a large number of different types of activity, ranging from the infrastructure, represented by the Internet and basic communications standards to the content standards.

It is commonplace to state that ICT standards are (or should be) global, indeed to state that “regional” standards have no place. There are several major reasons for regional activity:

- to make best use of participation of local/regional industry;
- improved account to be taken of end-user views;
- meeting local legal requirements;
- ensuring cultural requirements are taken into account, including the production of content standards in local languages;
- facilitating participation of SMEs and others in the process.

The downside is the risk, at least theoretically, that regional standards can be used as barriers to trade, although there does not seem to be evidence for this in the ICT sector.

Against this background, we have assumed the ideal model for ICT standardization is one where “regional complements global”. This can be done in different ways. The ISO and IEC standards system is of course conformant, and we have more recently seen the 3GPP effort for mobile. W3C and ISOC (but relatively few other consortia, many now in ICTSB) have regional offices or at least representatives. But whether we are talking globally or between global bodies and regional/national ones, there often seems to be a marked lack of dialogue and co-ordination. This tends to happen on a rather ad-hoc basis, for example some consortia choose to submit outputs to the global formal bodies for adoption at that level, or some consortia choose to collaborate on specific issues. But this is certainly not systematic. And often there is a critical lack of information on what the different organizations actually do – the closer the standards requirements are to end-user issues, the more acute this becomes, but even in infrastructural areas, the participants are often compartmentalised.

If anything, ICT standardization is becoming more critical an issue. A recent report by PriceWaterhouseCoopers (PWC) for the Dutch Ministry of Economic Affairs in connection with the current EU Presidency¹ lists ten “Breakthroughs” that are critical to achieve for ICT to fulfil its potential. Many of these have an inter-relationship with standards and one specifically concerns standardization:

Breakthrough 2: Standardize ICT environments in Europe to trigger and enable new business.

¹ “Re-thinking the European ICT Agenda – Ten ICT-breakthroughs for reaching Lisbon goals”, The Hague, August 2004

The principal path advocated in the PWC report is that “horizontal” initiatives are needed to weld together “vertical” solutions from sectors and resolve inter-operability problems resulting from fragmented approaches. Many of the problems are cross-border – despite the so-called global environment, there are still far too many incompatibilities between what is accepted in individual European countries.

There are many different subjects for ICT standards, for example, hardware, technologies, software, interfaces/architectures, processes, services, data, content, etc. The scope of this report is not intended to exclude any of these topics. However, each may require a different approach, or involve different actors and methods.

Another issue concerns who are the actual stakeholders in the ICT standardization process, in other words, to whom is this report actually addressed? These will include:

- Governments (central, local and including public sector agencies), as legislators, as “enforcers” and as the largest procurement market;
- Regulators
- NGOs (Non-Governmental Organizations), sometimes with a regulatory function;
- Trade associations/unions;
- ICT manufacturing and vendor companies and system integrators;
- Operators and service providers;
- R&D labs / Universities;
- Experts collectively (Professional Associations);
- End-users/consumers (groups / individuals / non-ICT companies/SMEs);
- The Standards Setting Organizations (formal and informal).

The section below on the economics of standardization includes how these various stakeholders will contribute directly and indirectly to funding the standardization process.

Section four: Structure and Organization of ICT standardization

Introduction

In this section, we shall review the current landscape, a bewildering array of standards bodies and ways of working. The questions considered in this context were aimed at exploring the critical consequences of this fragmentation, and what might be done about them.

Commentary

➤ The structures

The structures of Standards-Setting Organizations (SSOs) vary very much between geographical regions like the case for Europe and US, and for technical areas like Internet, ICT and goods. Indeed, it is difficult sometimes to find commonalities between the structures and organizations of industry standards consortia – this rich diversity can be considerably confusing for the market and make it difficult for bodies to collaborate with one another because of different rules.

The structure of each individual standardization and/or specification body seen today is mainly based on those established when the body was created.

The structure of the individual entities has developed over many years and sometime determined by cautious and long considerations in a bigger community and in other cases it seems to be based on individual ideas with some immediate support.

It is commonly understood that to comply with a voluntary, market-led standardization process, the activity should follow the basic principle that all possible means should be used to ensure that this process is open. At least the following are relevant elements in this process:

- The standardization activity must be carried out under a public process;
- Starting a project along with agreement on the scope, possibly including a requirements gathering activity;
- Drafting the technical contents of a new standard and building consensus on it. Normally, this is under the control of the committee that is responsible for the contents of the standard and has the necessary expertise, but with the potential involvement of other interested parties;
- Validation of the contents of the draft. Often this is achieved through a public review process, but some organizations achieve it through ensuring the activity is publicly known, and through the participants drawing up the specification being sufficiently representative in the first place²;
- Verifying interoperability of implementations. This may be achieved as an integral part of the process (as done, for example in IETF, ISOC IETF or OMA) or left to the parties involved;

² ANEC and NORMAPME, together with W3C and ISOC, recommend the use of an online public review process as part of the draft of an open standard

- Ratification by the members by voting or formal consensus process;
- Publication;
- Maintenance.

An open standard therefore should be³ :

- developed and/or affirmed in a transparent process open⁴ to all relevant players, including industry, consumers and regulatory authorities, as indicated above;
- either free of IPR concerns, or licensable on a (fair), reasonable and non-discriminatory ((F)RAND) basis^{5,6};
- driven by stakeholders, and user requirements must be fully reflected;
- publicly available;
- maintained.

Following previous debates, formal standards organizations have developed criteria for assessing whether other specifications (or the bodies supplying them) are meeting these criteria, for example the “Publicly Available Specification (PAS)” procedures of the ESOs or ISO and IEC (including ISO/IEC JTC1), or through ITU process. It may be useful for these to be developed further, for example in relation to benchmarking organizational performance against openness criteria.

➤ **Organization**

As far as Europe is concerned, these requirements can be met by full participation in the European process of CEN, CENELEC and ETSI, the three ESOs, with links to global activities, and/or it can be achieved by adequate European involvement in global consortia. Globally, of course the standards bodies at global level (ISO, IEC, ITU and UN-ECE) also meet the basic requirements. At the same time, some consortia also meet the criteria.

In Europe, the ESOs (with the national standards organizations) are defined also on a legal basis – i.e. they are recognized under Directive 98/34 as meeting certain criteria (which are to be reviewed). The national standards bodies may fulfil additional statutory functions at the national level, and also meet the WTO criteria (see below).

Some consortia, such as DVB or TV-Anytime, have a tight relationship to standardization bodies such as ETSI, which is even more fruitful as the two consortia use common specifications. One reason for this close inter-relationship is the relatively limited lifetime

³ Loosely based on EU/ISTAG

⁴ Open does not necessarily mean free

⁵ “FRAND” and “RAND” are often used inter-changeably.

⁶ W3C will not issue a Web standard if it is aware that Essential Claims exist which are not available on Royalty-Free terms. Refer to the W3C Patent Policy at <http://w3.org/Consortium/Patent-Policy/>

of some consortia. DVB has had an exceptionally long lifetime but TV-Anytime will stop next year. It is essential for fora organizers to think forward to the maintenance of their specifications, and the visibility of the specification to national bodies otherwise not directly involved may also add value. Other examples, such as OASIS providing their ebXML specifications to ISO TC154, exist because of the imperative to give the specifications the status of formal standards in order to secure wider market acceptance.

A relatively easy route for consortia specifications to become formal standards may be through the the publication of endorsement sheets. In such cases, the endorsement consists of a document that has the status of a formal standard, but simply tells people for the topic under consideration, they should use the consortia specification, which then becomes subject to the criteria required for the formal standard status. However, in such cases, there is still the need to be assured that the guarantees of openness are actually met. It can also raise copyright issues.

On the other hand the vast majority of consortia do not make recourse to formal standardization for their outputs, in particular perhaps because such action is not perceived as adding sufficient value, and may be seeing as slowing the process, and muddying IPR issues.

Furthermore, passing a specification to a formal standards body does not necessarily solve all the problems, and in particular it does not ensure that expertise will remain to answer questions and ensure that proposals for amendments are appropriate. The formal body may have to develop user groups and expert networks, and this constitutes a cost.

The global nature of ICT standardization is of course paramount. From a European perspective in the context of formal standardization, there are two issues - European input to global standards, and transposition of global standards at European level. The ESOs' inter-relationships with their global counterparts provide one mechanism to cover these issues. Due to high costs and low added value, transposition of international standards should be the exception in the ICT area. However, a complete picture of global standardization needs also to take account of the fact that much activity is in global consortia.

➤ **How might competition between interested parties impact ICT standardization?**

The clearest situation is where two bodies develop standards that overlap or conflict. A clear example of this was the VHS / Betamax / V2000 conflict, but similar cases are being repeated many times a year, currently over DVD specifications, and not just for commercial reasons, sometimes just for "NIH" ("not invented here") reasons.

For a variety of reasons, mostly related to market potential, there are occasions where the standards process comes under pressure because of competition between different interests in the standards process, for example over IPRs.

One route that may be taken by developers to circumnavigate this potential is to establish a closed consortium of likeminded organizations, excluding competitors, to develop a specification with which to gain market dominance. Alternatively, different "competing" standards solutions may be considered in different open consortia, or even inside the same standards organization.

Concluding Remarks

Over the years, the complexity of ICT standardization structures has grown enormously. The overall importance of the standards effort, and the amount spent on it, has also tended to grow. However, “institutional” arrangements, whether these are the formal bodies or the habit to form new standards consortia in isolation, have simply not kept pace with the pace of change. This must be to the detriment of effectiveness of the standards process, whether the shortcomings are real or perceived. Formal standardization processes should be re-examined to see how they can be improved to address current stakeholder requirements.

On the ICT market, the players in the new value chain have commercial incentives to achieve end-to-end interoperability between network/device interfaces while allowing for competitive differentiation of applications and services.

Standardization is essential, but not sufficient, to achieve network interconnection and interoperability of services at the international level. Moreover, standardization in support of interoperability requires activities beyond traditional standardization, such as interoperability testing, reference implementations, guidance etc. Standardization in support of interoperability has developed in different patterns.

Possible Ways forward

In relation to the specific issues discussed above, there may be opportunities to improving this state of affairs by finding means to:

- have a flexible and more integrated approach that ensures timely development of standards, or additional standards related documents, that are responsive to the specific needs of the market and do not inhibit innovation. This could be achieved through increased fora hosting; through a more elaborated co-operation with fora and consortia at the ICTSB level;
- draw up broad benchmarking criteria, that can be used to assess the openness of standards or standards bodies, and their interaction and collaboration;
- encourage a deeper understanding by regulatory authorities of ICT standards issues;
- encourage consortia to develop more systematic relationships with formal standards bodies, to see them as a more natural “next step” with their specifications;
- encourage formal standards bodies to adopt a more pro-active approach towards consortia, establishing collaboration at the technical level;
- encourage global consortia to take account more effectively of the regional dimension. As far as Europe is concerned, where consortia lack a regional presence, encourage them to use the ESOs for this purpose;
- improve co-ordination between consortia and formal standards bodies by encouraging the development of issue-specific co-ordination/steering types of activity on specific subjects at regional and worldwide levels (c/f GSC, ICTSB sub groups, eBusiness MoU, ITU-T eHealth Co-ordination Group);

- at European level, ESOs should consider how to respond to market demand for standards on the part of stakeholder groups with a very specific and focussed target, in the interests of speed;
- the ESOs should examine their respective roles in the light of convergence of technologies. The current work repartition on ICT issues between CEN, CENELEC and ETSI, which was drawn up as long ago as 1990, should be updated.

Section five: The role of public authorities in ICT standardization

Introduction

Governments have a strong policy interest in standards development, but also are an end-user of the standards themselves. As far as the policy side is concerned, most of them need to be involved in the general principles (“requirements”), but not in the actual content process. This is not the case where they are acting as an “end-users”, where they should participate on the same basis as other market players.

At the outset, we must indicate that European community support to the standards effort is certainly not unique. At national level, many formal national bodies receive enormous support from their authorities, and this applies both in Europe and in other parts of the world such as China, Japan and the USA. However, the present document describes the scene from a European perspective.

Standardization is a voluntary process, industry led and market driven, its results are by nature not binding. The characteristics of the European standardization process are set by the Directive 98/34. Public Authorities have a legitimate interest in standardization and will make use of standards when they want to implement a specific policy, legislation or when they want to launch a specific service. Indeed, Governments are also very large customers, both directly and through their ability to make recommendations for public procurement which can be very widely used.

Commentary

Europe needs a standardization structure that fits the current liberalised market. In fact, over the last decade, the (ICT) marketplace has fundamentally changed and changes seem to be lasting: the liberalisation of the market which has brought competition within and between sectors; the globalisation of markets with technology developments pursued in global strategic partnerships and coalitions and a reduced role from legislation. But perhaps most important is the shift away from hardware to software. The monolithic world of the past has been replaced by a heterogeneous technology development and standards environment and new complex relationships between networks and business models as well as contractual and strategic business relationships – often at global level - between all key players. A European ICT standardization policy should take into account the following key issues:

- The current EU standardization policy , and subsequently the ESO infrastructures, rules and processes, are based on the Directive 98/34, originally Directive 83/189, which finds its origin in the Internal Market objectives and focuses on the use of standards in support of internal market legislation; especially the New Approach legislation. The EU standardization system is based on full openness to European-based participants if not globally, democracy, transparency and inclusiveness. Clear IPR rules are agreed, as well as national implementation of standards agreed by bodies across the EU. The deliverables of the ESOs’ formal consensus process as covered by the Directive are mainly the traditional ENs, although Directive 98/34 provides the definition of a “standard” within the context of the current EU standardization policy.

- Although the legal framework has been effective in supporting the New Approach in a number of areas, its adequacy to today's market conditions, in particular in the ICT sector is questionable⁷;
- The legal framework for standardization is about to be reviewed; the specificities of the ICT domain will be taken into account. Furthermore, the new Framework Partnership agreement between the Commission and the European Standardization Organizations provides a solid operational basis for supporting the co-operation between the ESOs and the European Commission;
- The ICT market is in constant evolution, it is characterised by globalisation, telecommunication liberalisation, convergence between telecommunications and information technologies, and in the near future with media and broadcasting services. ICT technologies are pervasive; all industries are ICT users; consequently the ICT standardization community is in constant change. There is no stable community, the way one exists in traditional domains such as construction, machinery or pharmaceuticals;
- The global dimension is an essential aspect of ICT standardization; the European standardization process should provide stakeholders with an opportunity to better impact the international standardization scene; the ultimate objective is to reach global acceptance for standards;
- Consortia/fora standardization has become an increasing practice in the ICT sector. Many standards have been developed outside the remit of the formal European and international standardization organisations; often by the same industries that are part of the "membership" of the formal standards organisations. Some of these standards have been successful and reached broad market acceptance, although in practice this acceptance seems often to be limited by lack of end-user awareness, or simple competition between different proprietary solutions. Public authorities, as well as other stakeholders, want standards and standardization infrastructures to offer solution driven standards available in time and in a flexible manner. The available solutions range from the full formal standard, "new deliverables" or similar from formal bodies, consortia documents (developed through processes with different levels of consensus), and proprietary standards. The choice will depend on the circumstances; it is for the market to decide;
- In the ICT domain, the link between R&D and standardization is of particular importance; standardization is in a position to leverage the consensus reached within an R&D project at the European and/or international level the results of EU research will subsequently be consolidated. Due to the complexity of the issue, the high technical expertise required in a particular domain, the fast technological evolution and the specialised user community, formal standardization may however not be the preferred option; more restricted groupings would certainly have an advantage. In addition, the formal standardization process, especially ex-ante standardization efforts, would benefit from targeted R&D initiatives to speed up the

⁷ The EU regulatory acts that affect ICT have internal market objectives; however, they are not, generally speaking, New Approach legislation. The policy objectives for these EU legislative acts may not have ICT as their prime objective, e.g. privacy, electronic signature, VAT. But their implementation inevitably requires ICT applications, and their effective implementation requires these to be standardized. The EU ICT standardization infrastructures should reflect these characteristics if the ESOs are to produce the timely and "solution driven" standards that industry/business/market want.

standardization work. Projects such as COPRAS (standardization liaison for the IST programme under Framework 6) should be further promoted and the concept extended;

The increasing use of fora/consortia infrastructure by industry continues to be challenging for the ESOs in their actual structures and processes. These changes impact on the role of the European Commission as public authority, and there are pressures sometimes to provide some kind of endorsement for specifications coming from consortia. The current legislation, and indeed the proposed amendments to it, concerning standardization support permit funding only the recognized ESOs. Having said this, support is given by the European Commission to various activities in consortia under the R&D Framework Programmes.

The Commission's interest in ICT standardization can be divided into different categories:

- Standardization in support of regulation/legislation;
- Standardization in support of EU policies, not being embedded in legal frameworks;
- Standardization policy in support of the competitiveness of EU industry.

➤ **Standardization in support of regulation/legislation:**

European legislation may be related to internal market considerations, or produced for other Community reasons. It may be "new approach", or it may be of a different type but still have standards implications.

Whilst the Internal Market/New Approach situation is precisely defined, e.g. the current legal basis for standardization provided by Directive 98/34; the situation is less evident for the other cases (although Directive 98/34 does give some recognition to deliverables other than ENs). As ultimately national public authorities will need to provide legal recognition for the standardization deliverables in view of compliance with the legal framework; a reflection should be initiated on how standardization can be used in support of these legal frameworks, taking into account the specificities of the ICT market.

At present, the admittance of "new deliverables" in the context of regulation/legislation has been somewhat ad-hoc. There have been examples in the case of the ONP Directive, that on Electronic Signatures, and the Communications Framework Directive. In a fast-moving sector such as ICT, formal ENs may be (wrongly) thought to take too long to produce, but it is often the legal procedures to recognise the standards that take a very long time. For example, standards publication in the EU Official Journal under the New Approach Directives, or recently in the context of the Electronic Signatures Directive, can take longer than it does to draft the standards in the first place.

Sometimes, Community legislation may encourage the use of specifications originally produced by consortia or informal standardization. There are examples, for instance in the broadcasting sector, where the products of the EBU or DVB are ratified as ENs, through the formal process. In theory (e.g. electronic signatures) consortia specifications could be used in a non-New Approach legislative context, but in practice the consortia themselves would need to be evaluated against the need for openness, democracy, inclusiveness, efficient maintenance mechanisms etc., as required for standards aiming at this particular

use. In addition, for standards to be used in support of legislation, IPR policies would have to be based on (F)RAND principles.

➤ **Standardization in support of EU policies, not being embedded in legal frameworks**

In this particular case, public authorities are interested in the provision of transparent, open and democratic platforms for consensus building which allow all relevant stakeholders to participate. Some at least of the same constraints as in the previous section apply, therefore. There are also important issues such as privacy, security including cyber-crime, accessibility, environmental concerns and so on that also may be of importance in public policy terms.

On the other hand, the main aim is to achieve the objectives set by the policies with the support of standardization while taking into account public interest aspects. For this particular use of standardization deliverables, the co-operation with consortia and fora, the specific process and rules; an in-depth reflection should be initiated. However, there needs to be a more coherent dialogue between public authorities, formal standards bodies and consortia, and it is probable that in cases where specifications are used from consortia without a European presence, the ESOs should play some kind of role.

In general, ICT standards are global, and global solutions, where available, are therefore to be preferred in this context.

➤ **Standardization policy in support of the competitiveness of EU industry**

Standards produced to meet general requirements should in practice be in accordance with the EU competition policy. Public authorities should not be involved in this domain. It is, however, generally important that open, neutral and accessible platforms are provided for reaching consensus.

Concluding Remarks

The changed environment for ICT standardization should be reflected in a reorientation of the EU standardization policy and the role of the ESOs; the Communication on the role of EU standardization in support of legislation and policies seeks to describe the new challenges and provide a basis for further discussion, with the objective to re-orient the ICT standardization policy when reviewing the Directive 98/34. The financing policy towards EU ICT standardization should reflect the new environment. The implementation of such a new policy would require close collaboration with the ESOs and consortia; ICTSB would be a good place for further consideration of the issues.

In short, as a general principle, the principles of openness, transparency, consensus, full participation of all stakeholders which may be achieved by direct participation or by national delegation and coherence should always be respected. This is of utmost importance whenever the public interest is concerned, in particular when standardization mandates are issued.

Easy and prompt accessibility of standards is beneficial to the end-user. Already, a very large number of ICT standards and specifications are freely available. These include many consortia products (though not all), those of ETSI, some from ISO/IEC JTC1 and some

CEN Workshop Agreements. However, free availability is typically paid for by membership or participation fees to the standards body concerned. Under the alternative model, used, for example, by CEN and CENELEC, and ISO and IEC, as well as bodies such as IEEE, the standards infrastructures are in part financed through the revenue derived from the sale of standards.

The first model is therefore one where, in the case of freely available standards, the cost of disseminating standards is borne by the producer of the standard, i.e. the members who contribute to standards making (through membership or meeting fees). In the standards-paying model, the cost is borne by the user of the standard, i.e. the one who buys it, irrespective of whether it contributes to it (although sometimes the contributor gets a better deal). Of course, the first model makes it easier to all users but both have their merits.

Possible Ways forward

In a more integrated process, the following issues need to be taken care of:

- given the global nature of ICT, the European Commission should rely on international standards unless there are specific European requirements;
- the European Commission should review its own ICT standards requirements and means of support to relevant bodies, that is the purposes for which they need standards, including public procurement and public policies, and put criteria and procedures in place to allow evaluation of consortia as producers of relevant specifications. These actions may require the involvement of the ESOs, and of consortia; ICTSB is a good place for co-ordination;
- the European Commission should streamline its procedures to use and recognize standards required to implement regulatory requirements;
- it goes without saying that public authorities should encourage every attempt at making standards “easily and promptly available” to all; In addition, the ETSI community promotes the free availability of its standards. However, the business models of CEN, CENELEC, ISO, IEC and their members are based on different principles as discussed above. Further work has to be done to understand the impediments to getting standards quickly and effectively into the market place. The EC is encouraged to contribute to this work;
- there should be targeted and well focused promotion activities that can be supported by the public authorities. Such activities will help to ensure that proven and well used standards are easily found by European users, and that they are encouraged to use them;
- the European Commission should develop an integrated standardization policy including better liaisons with R&D, collaborative initiatives, clarification of legal aspects, IPR policy, interoperability aspects and international dimensions as well as a better support towards implementation of standards notably via public procurement;

Section six: The economics of ICT standardization

Introduction

What is the investment necessary for standardization? – Who benefits from it? The answers will depend on who are the players, and why they are considering standardization.

To analyse the economics of ICT standardization requires recognition of the complexity of the subject. Factors range from societal needs to individual requirements, the complexity and scope of ICT standardization to the focus of a single specific standard.

An organization will engage in the development of a standard for a variety of reasons. Among these are increased market share, improvement of trade, aid to procurement, interoperability through interfaces, benefit to consumers, and accessibility for all.

A developer of a new technology to be implemented in a product or service must make choices if it wants to capture the largest market share? Among these are guarding the technology and hope to take the entire market share, or opening the technology to others enabling interoperability, portability, compatibility, hoping to increase the overall size of the market and consequently better market return.

If the developer chooses the standardization route, what are the chances of success of that standard? Will the developer do better in a consortium specifically created for the purpose, in an already established organization that can provide a recognised framework and consensus mechanism, and at what level, national, regional, international?

Of course in an environment that is open to all, the developer has to take into account the views of competitors, consumers, special needs communities, academics, government agencies and other interested parties. To what extent would this dilute, delay or otherwise negatively impact the developer's ability to keep the standard and his product or service aligned and meet his time to market?

If the developer goes for the open approach in an existing standards setting organization (SSO), how can it gauge how effectively the standardization lifecycle is managed, how the quality of the end product can be measured, the costs incurred (taking all factors into consideration), and ensure that the standard once developed is appropriately maintained and updated?

So, we come to the SSOs. It is their business to provide the infrastructure for the progression of standardization. They offer a playground for variety of interested parties. How do the economics play out for them?

Developers, and other interested parties, need information about the standardization process to make informed judgements about participation and to effectively participate in the process. To what extent is this need being currently addressed? Is there a need for education and promotion of the standardization process?

Those participating in the standardization process develop valuable expertise. Are the skills of these participants properly recognised within their organizations? It can be difficult for researchers to participate, for instance.

Finally there are a number of the key issues pertinent to the economics of standardization which need to be addressed, e.g. inter-operability, trust and confidence/security, cultural/localisation issues, etc. What is already being done about them?

Commentary

➤ ***For what economic reasons are standards and other related deliverables developed, i.e. what drives ICT standardization?***

The answer will depend on who is the driver.

The benefits of standardization are manifold:

- Wide adoption of a technology:
 - Bigger market (commoditize equipment and reduce cost);
 - Wider customer base;
 - Interoperability, technical validity;
 - Allows differentiation;
 - improves competitiveness;
- Simplification of operational processes;
- Long-term investment, stability, credibility;
- Clear status of the specification (including legal);
- Disclosure and licensing obligations as they apply to participants in the standardization work;
- Shared expenses (testing, PR, marketing);
- Answering identified requirements, producing standard solutions fit for the purpose;
- Spending on standards early to save costs later;
- Reduction of non-compatible solutions;
- Easier to introduce new services if based on standards;
- Networking with competitors;
- Corporate image
- Addressing of societal aspects, for example concerning accessibility standards issues.

Having assessed the potential benefits of standardization, there are some additional relevant factors that companies and other interested parties need to take into account in a cost/benefit analysis:

- How is the expected end product tied to organization's strategy/profitability?
- Will the expected availability of the end product coincide with the lifecycle of any related commercial product?
- Is the end product to be used in procurement or for regulatory purposes?
- How are quality, compatibility, and interoperability to be managed?
- Does the organization need to participate in the standardization process to achieve the desired effect?
- Experience/understanding of participants in the standards process;
- Do participants need training in standardization?

For market players, the main investments required to participate in standardization are:

- Participation costs (staff time in preparing contributions and attending meetings, travel costs);
- Membership fees;
- Intellectual investment, in terms of providing trained expertise and contributions;
- Opportunity cost, in terms of the use of available expertise on standards issues, as opposed to other activities such as research;
- The consensus process potentially delaying time to market;
- The cost of contributing company intellectual property;
- The time taken to disseminate and promote the results to customers.

➤ ***What are the chances of success of a particular standard?***

There is no single recipe for success, but a number of relevant factors need to be considered, including the following:

- The standard should be needed, i.e. it should answer identified requirements, which may be regulatory or customer-related – industry users, SMEs, consumers, etc.;
- The market should be ripe for standardization, not too early, not too late;
- The standard still leaves sufficient room for product differentiation;
- There is a critical mass of interested parties creating and adopting the standard;

- Implementation aspects are addressed as appropriate and in a timely manner – i.e. interoperability, testability, reference implementations etc;
- When a standard comes in support of public policy, there is appropriate political support.

In fact, a positive sign for a standard is the request for an amendment. This means that it is being implemented, even if not yet visible in commercial products.

➤ ***Is there a need for professional recognition of the participants of ICT standardization? If so, who should be doing it?***

Standardization constitutes a specific set of skills, for which professional recognition should be given due attention, for example in University and other higher education programmes.

➤ ***Is there a need for education and promotion of ICT standardization? If so, who should be doing it?***

One might ask if there is a need for education in, or awareness and/or promotion of ICT standardization. Are those participating, the managements of their organizations, or the public at large sufficiently aware of the appropriate aspects of ICT standardization to make informed judgements and decisions when necessary? The short answer is No!

There is considerable evidence that senior management of interested parties are often uninterested or dis-informed with respect to ICT standardization, that new participants are unprepared for their tasks, and that members of the public often mis-understand those occasional aspects of ICT standardization that they encounter.

Who should spearhead the efforts to address these problems?

The SSOs currently promote ICT standards information and use. Is this sufficient? Do SSOs promote the benefits of standards? To whom? For example, how do they target the various user communities? How do they finance standard information campaigns?

What about the academic institutions? Do management and technical course curricula in higher education promote standardization sufficiently enough?

As for the participants themselves, do senior management of interested parties recognise the professional expertise of their standards participants? What training do they require? Should this include training on processes including legal aspects? Who should be providing the training, the SSOs or the academic institutions?

A typical example is that in many companies, senior management often regards standardization as purely a technical issue, not meriting their own time. The result is insufficient understanding of the costs and benefits in terms of their market, as described above, and insufficient prioritisation.

As indicated further above, there is one group of people who are interested parties but whose interests, needs are not usually addressed collectively. These are the participants

themselves. Mostly they are representatives of one organization or another, but sometimes academics or individuals.

Concluding Remarks

Standardization represents an investment for all concerned, and therefore the setting of requirements needs to be managed carefully, to ensure that time is not spent on activities that do not provide an adequate return on that investment.

It should be noted that there are public interest issues that justify strong support from public authorities to the standards process.

Possible Ways forward

- The European Commission should continue to contribute financially to the overall standards infrastructure in the ESOs, as advocated in the recent Communication to the Council.
- *As far as the user of the standard is concerned, the document containing the standard should be available free of charge. However, as noted in the previous section, this is often only achieved at the expense of participation fees.*
- There should be a “guide to standards participation”, to improve stakeholder awareness on where and how to participate in order to achieve their aims. This should include an awareness of the costs/benefits of setting up or participating in a consortium to do the work, as compared to doing it through a formal standardization process. It should promote and encourage efforts that avoid undue duplication or overlapping activities.
- There is a need for education and awareness of ICT standardization for participants, their managers and the public at large that is currently not being fully met. This could, for example, be met by standards bodies or by academic institutions, funding permitting.
- ICT standardization participants are not always recognised as professionals; few academic curricula include standards issues. Improvements would help senior management awareness, and reduce overall standards costs.

Section seven: The role of the end-user

Introduction

This section discusses a somewhat emotive issue in some terms – how far does the ICT standards process actually need to involve the end-user, and, if so, in what terms should this be optimally achieved?

Commentary

There are different “user debates” in standardization as it is not really clear who the “users” exactly are. So far, the most popular definition of users is the most comprehensive: any physical or legal persons making use of products and services in the field of ICT. This definition, however, does not capture the whole range of stakeholders’ interests, which embrace a wide set of purposes. Generally speaking, the users tend to be spoken of as one group of people, but in practice this represents a lowest common denominator in the use of ICT products and services. The exact purpose of the use, and the exact nature of the user, are often disregarded.

There are some formal definitions, for example in the Electronic Communications Framework Directive (2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services).

➤ **Consumers and businesses outside ICT**

Consumers and businesses outside the ICT field constitute a specific category of users as they use ICT products and services for purposes that are outside their trade or profession. User participation in the ICT standardization process is important for many reasons: firstly, because this representation counterbalances the technology provider’s view; secondly, goods and services based on standards developed with end-user participation will be more easily accepted in the marketplace; thirdly, users are affected by the standards at the end of the process and finally, in the EU context, consumers (in the broadest sense) ensure that the public interest is represented in standardization work that complements European legislation under the New Approach to Technical Regulation. However, this probably depends on the standard itself. Consumers or end-users do not in general choose to participate to the standards process for all of the goods they might consume or use; however they may well need to have a say in the requirements setting for those standards and in the final validation process.

The small business users are a different category again. They have their specific needs for standards and rules. They may have similar wishes as consumers for simple and straightforward solutions written in a language understandable for the unqualified user. But they align with big businesses on their need for good well defined and secured systems, working on the basis of a minimum of boundaries and local differences, while the consumer often looks much more for a local country solution, as he is protected by his country’s law.

The traditional debate has been how users can influence technology content of standards without either:

- having the expertise of the technology providers;
- having the resource to participate.

Typical examples are ongoing (over many years) debates in ETSI about a User Group, and what its contributions ought to be, and how more users can be influenced to participate. In any case, the experience of this Group shows that different users might have different requirements, which then need to be recognised. Of course, this is the case for all sectors (various industry players will also have different views). The purpose of the standards process is to find a consensus on the requirements for a given standard. Moreover, end-users at the infrastructure level may spend time trying to influence the technology contents of the standards, while their main interest is the performance and service aspects.

A sub-debate of this, not without significance, is related to users in the consumer sector, including, but not confined to, people with special needs.

These people have the same participatory constraints as the general user of technology, but in addition they feel they have very specific issues that are not being addressed, either because the technology providers do not want to, or because they are more concerned with getting products to market. The end-result of the standardization to take full account of these issues would be undue increases in the cost of products. The result of efforts generally so far to consider these issues is a long and unfulfillable “wish list” of standards-related ideas that cannot be taken any further.

On the other hand, not taking due account of user requirements at the start of standards-setting processes may (indeed in the eBusiness area, for instance, often does) result in standards that in practical terms find no market acceptance, and further changes and adaptations may not be possible.

➤ **Standards prompted by the end-user/consumer**

There are, however, areas where standards are really prompted by the user. Privacy and accessibility standardization come to mind, and in these and perhaps some other cases, standards activities in W3C, ISOC ECC, CEN/ISSS and ETSI are essentially user-driven.

Another set of issues, related to content-related standards, is somewhat different, but users feel excluded just the same. Originally users had a say in the development of standards but, with the ever faster technological developments, and the drive to sell software, they have been disenfranchised. As an example, standards for Electronic Data Interchange (EDI) relate to the content of the data transmitted – the standards here are typically related to the “business process”. Traditional EDI standards (in UN/EDIFACT and ANSI X.12) were/are essentially “user-driven” – they relate to business requirements of Governments, for example customs or statistical data, and companies, for example, enquiry/ordering/delivery/invoicing etc.: the standards are for how data can be transferred from A to B.

The advent of the dot com boom was supposed to change this – traditional EDI would disappear in favour of web-based eCommerce, etc. Essentially, successive developments in eBusiness-related standardization have been more technologically driven than user-driven. The result has been competing specifications, even sometimes specifications that

do not even “work” and that are certainly unusable by companies without large investments. Therefore those that use traditional EDI (now 20 years old) stick with it. However, the absence of usable standards has discouraged non-EDI users from generally taking the plunge into eBusiness.

Some “user” entities with the awareness of the need for a set of standards, the desire for speed, and the necessary resources have formed their own consortia. Examples in eBusiness standards are CIDX (chemicals), PIDX (petroleum), RosettaNet (started essentially for IT suppliers, but also now embracing electronic components and telecommunications supply chains). Inevitably comes the complaint from the technology standards groups that these user-driven consortia do not dialogue with them. Local industry groups or SMEs, etc. do not have usually the resources to form their own consortia at a global level or even to participate in the technology groups.

This situation overall is detrimental to the end-user which is not a large company, but which needs to be involved in standardization processes.

Concluding Remarks

We may draw a number of conclusions. First, standardization is an economic activity: it may lower the price of the goods, and/or may increase the market for these goods. The end-user has a role in this activity because as consumers, the end-users can “vote with their feet” by simply not buying products that do not meet requirements.

It is certain that in areas that are relevant for all end-users, including consumers, these would like a standards system that is easier to work with, that provides clear and understandable information to them, and that has a good structure for the input of user requirements into the process.

Clear terminology is important in framing requirements. Users should be those formulating the requirements for standards for products and services. Terms such as “easier” and “user-friendly” need to be more precise. The problem is how to translate real requirements into technical terms. It is often perceived that consumer input is not valued, either because it is of a non-technical nature, or because it is not always framed in industry-specific language.

The users of a standard need to be able to understand it, and sometimes need help in order to do so. Therefore it is often necessary to back standards up by making a more user-friendly guideline that summarises a standard’s main points, written in the normal language of the user group concerned. SMEs are typical examples of this need.

Possible Ways forward

- Standards organizations should adopt a more systematic approach towards user inputs, i.e. requirements gathering/checking. This might be achieved in the first instance through the inclusion of information at the adoption of work item proposals as to whether user/consumer requirements have been expressed, and if so, how.
- Consideration should be given to systematic user/consumer consultation on draft standards of interest to them. This should be seen as an integral part of the standards development process, and therefore not as an added bureaucratic burden. On the other hand, such consultation could also be undertaken in

connection with pilot implementations or trials of the standard, thus providing added value.

- Global standards development organizations (formal and consortia) to be encouraged to involve end-users/consumers at a regional level, to ensure local needs are met, and to facilitate consultation and involvement. This is already done in the ESOs with ANEC, NORMAPME and others, and in ETSI with the User Group, Board and GA user representatives. The process is in place but users still lack the necessary resources. Similarly, standards bodies should continue attempts to fully involve users of ICT in non-ICT enterprises to bring their requirements into the standards process.
- The European Commission should continue to fund user involvement in standardization.
- Encourage more “federated” behaviour by consortia, perhaps through formation of an association (with other beneficial other spin-offs). Improve end-user/consumer awareness. ICTSB to consider what might also be done to improve information (e.g. a single consortium list as a portal). A first consideration should be given to evaluate how far the requirements are answered by the existing lists provided by CEN/ISSS consortia survey) and ETSI (Forawatch) that gather information on more than 400 ICT fora, that can easily be linked to the ICTSB site.

Section eight: Overall concluding remarks

In such a complex frame, it is not easy to draw a set of key messages; there are certainly no “quick fixes” to resolve the issues we have considered. Indeed, a lot of hard work is required even to reach a general awareness of the problems. We hope the present report will, nevertheless, improve this situation, especially amongst decision-takers not normally close enough to the standards coal-face to appreciate the problems, the extent of which have grown enormously. The overall importance of the standards effort, and the amount spent on it, have also tended to grow.

Critical to this improved awareness are issues such as the number and complexity of ICT standardization structures. There is still too little understanding of the dynamics of why these are created, and, despite some mergers and closures, still a tendency to create them for new activities rather than use existing bodies. The formal standards bodies do not seem attractive enough for this purpose. There are still too few synergies between rules and processes

Overall, the result of this fragmentation is detrimental to interoperability.

Whilst the remedies to this lie essentially with the market stakeholders, in the European environment, the ongoing role of the Commission as a “facilitator” of standards, in terms of legislation calling up such standards, in terms of support to the standards infrastructure and so on are all important contributors. The EU is in any case reviewing the legal basis of European standardization; this review and its implementation should take due account of the specific ICT standards issues discussed in this report, whilst maintaining the fundamental principles of openness, transparency and so on.

The Commission's financial support is frequently justified on public interest grounds, but the amounts are in effect the tip of an iceberg – ICT standardization represents a very significant investment for all concerned with it, and there is considerable scope for improved understanding and acceptance of this fact in order to maximise the benefits of this investment.

The role of the end-user is equally very important in terms of ensuring a cost-effective process, in other words taking due account of what are the end-user's requirements. In order to achieve this optimally, then we need to ensure a user-friendly approach, and that there is clear information available on who is doing what and why, and also clear guidelines on the implementation of standards.

Section nine: Some references

Web sites

ISO (International Organization for Standardization) – www.iso.ch

IEC (International Electrotechnical Commission) – www.iec.ch

ITU-T (The International Telecommunication Union, [Telecommunication Standardization Sector](http://www.itu.int)) – www.itu.int

ICT Standards Board members

ICTSB – www.ictsb.org

ATM Forum - www.atmforum.com

CEN (The European Standards Committee) – www.cenorm.be/iss

CENELEC (The European Committee for Electrotechnical Standardization) – www.cenelec.org

DVB (Digital Video Broadcasting) Project – www.dvb.org

EBU (European Broadcasting Union) – www.ebu.ch

ECBS (The European Committee for Banking Standards) – www.ecbs.org

Ecma International – www.ecma-international.org

ETSI (European Telecommunication Standards Institute) – www.etsi.org

EICTA (The European Industry Association for Information Systems, Communication Technologies and Consumer Electronics) – www.eicta.org

ERTICO – www.ertico.com

Internet Society – www.isoc.org

Liberty Alliance – www.projectliberty.org

OMG (Object Management Group) – www.omg.org

OASIS (Organization for the Advancement of Structured Information Standards) – www.oasis-open.org

RosettaNet – www.rosettanet.org

TeleManagement Forum – www.tmforum.org

The Open Group – www.opengroup.org

W3C (World Wide Web Consortium) – www.w3.org

ICTSB Associates

European Association for the Co-ordination of Consumer Representation in Standardization - www.anec.org

The European Office of Crafts, Trades and SMEs for Standardisation - www.normapme.com

Articles, etc.

“The Balkanisation of Standards-Setting”, Andrew Updegrove:
<http://www.consortiuminfo.org/bulletins/mar04.php#editorial>

“The battle for web services”: <http://www.cio.com/archive/100103/standards.html>

“eBusiness standards - re-intermediating the end-users” - *International Journal of IT Standards & Standardization Research (JITSR)*, Volume 1 No. 2

“The importance of open and interoperable standards” – EICTA position paper, 21 June 2004:
<http://www.eicta.org/Content/Default.asp?PageID=235>

“The meaning of open standards” – Ken Krechmer in *The Standards Edge*, 2003 Edition Bolin/Sun, San Anselmo (CA)

“Open Standards Principles and Practice” (<http://perens.com/OpenStandards/Definition.html>) - Bruce Perens, September, 2004

Standards Engineering, Vol. 50, No. 6, November/December 1998, - pp. 1-6 – Ken Krechmer.
<http://www.csrstds.com/openstds.html>

Section ten: Relevant legislation

➤ Basic legislation on European ICT standardization

Directive 98/34/EC of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations

Directive 98/46/EC amending Directive 98/34/EC of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on information society services

Council Decision 87/95 of 22 December 1986 on standardization in the field of information technology and telecommunications

➤ Other legislation with an impact on ICT standards

Recommendation 94/20/EC, the European Model EDI agreement

Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data.

Directive 99/5/EC of the European Parliament and of the Council relating Radio Equipment and Telecommunications Terminal Equipment and the Mutual Recognition of their Conformity

Directive 99/93/EC on a common framework for electronic signatures.

Directive 2000/31/EC on certain legal aspects of information society services, in particular electronic commerce, in the internal market (“directive on electronic commerce”)

Directive 2001/115/EC amending Directive 77/388/EEC with a view to simplifying, modernising and harmonising the conditions laid down for invoicing in respect of value added tax.

Directive 2002/19/EC on the access to, and interconnection of, electronic communications networks and associated facilities

Directive 2002/20/EC on the authorisation of electronic communications networks and services

Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services

Directive 2002/22/EC on the universal service and users' rights relating to electronic communications networks and services

Directive 2002/58/EC on the processing of personal data and protection of privacy in the electronic communication sector

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Annex A

WTO code (extract from TBT Agreement)

Article 4

Preparation, Adoption and Application of Standards

4.1 Members shall ensure that their central government standardizing bodies accept and comply with the Code of Good Practice for the Preparation, Adoption and Application of Standards in Annex 3 to this Agreement (referred to in this Agreement as the "Code of Good Practice"). They shall take such reasonable measures as may be available to them to ensure that local government and non-governmental standardizing bodies within their territories, as well as regional standardizing bodies of which they or one or more bodies within their territories are members, accept and comply with this Code of Good Practice. In addition, Members shall not take measures which have the effect of, directly or indirectly, requiring or encouraging such standardizing bodies to act in a manner inconsistent with the Code of Good Practice. The obligations of Members with respect to compliance of standardizing bodies with the provisions of the Code of Good Practice shall apply irrespective of whether or not a standardizing body has accepted the Code of Good Practice.

4.2 Standardizing bodies that have accepted and are complying with the Code of Good Practice shall be acknowledged by the Members as complying with the principles of this Agreement.

Article 10

Information About Technical Regulations, Standards and Conformity Assessment Procedures

10.1 Each Member shall ensure that an enquiry point exists which is able to answer all reasonable enquiries from other Members and interested parties in other Members as well as to provide the relevant documents regarding:

- 10.1.1 any technical regulations adopted or proposed within its territory by central or local government bodies, by non-governmental bodies which have legal power to enforce a technical regulation, or by regional standardizing bodies of which such bodies are members or participants;
- 10.1.2 any standards adopted or proposed within its territory by central or local government bodies, or by regional standardizing bodies of which such bodies are members or participants;
- 10.1.3 any conformity assessment procedures, or proposed conformity assessment procedures, which are operated within its territory by central or local government bodies, or by non-governmental bodies which have legal power to enforce a technical regulation, or by regional bodies of which such bodies are members or participants;
- 10.1.4 the membership and participation of the Member, or of relevant central or local government bodies within its territory, in international and regional standardizing bodies and conformity assessment systems, as well as in

bilateral and multilateral arrangements within the scope of this Agreement; it shall also be able to provide reasonable information on the provisions of such systems and arrangements;

10.1.5 the location of notices published pursuant to this Agreement, or the provision of information as to where such information can be obtained; and

10.1.6 the location of the enquiry points mentioned in paragraph 3.

10.2 If, however, for legal or administrative reasons more than one enquiry point is established by a Member, that Member shall provide to the other Members complete and unambiguous information on the scope of responsibility of each of these enquiry points. In addition, that Member shall ensure that any enquiries addressed to an incorrect enquiry point shall promptly be conveyed to the correct enquiry point.

10.3 Each Member shall take such reasonable measures as may be available to it to ensure that one or more enquiry points exist which are able to answer all reasonable enquiries from other Members and interested parties in other Members as well as to provide the relevant documents or information as to where they can be obtained regarding:

10.3.1 any standards adopted or proposed within its territory by non-governmental standardizing bodies, or by regional standardizing bodies of which such bodies are members or participants; and

10.3.2 any conformity assessment procedures, or proposed conformity assessment procedures, which are operated within its territory by non-governmental bodies, or by regional bodies of which such bodies are members or participants;

10.3.3 the membership and participation of relevant non-governmental bodies within its territory in international and regional standardizing bodies and conformity assessment systems, as well as in bilateral and multilateral arrangements within the scope of this Agreement; they shall also be able to provide reasonable information on the provisions of such systems and arrangements.

10.4 Members shall take such reasonable measures as may be available to them to ensure that where copies of documents are requested by other Members or by interested parties in other Members, in accordance with the provisions of this Agreement, they are supplied at an equitable price (if any) which shall, apart from the real cost of delivery, be the same for the nationals of the Member concerned or of any other Member.

10.5 Developed country Members shall, if requested by other Members, provide, in English, French or Spanish, translations of the documents covered by a specific notification or, in case of voluminous documents, of summaries of such documents.

10.6 The Secretariat shall, when it receives notifications in accordance with the provisions of this Agreement, circulate copies of the notifications to all Members and interested international standardizing and conformity assessment bodies, and draw the attention of developing country Members to any notifications relating to products of particular interest to them.

10.7 Whenever a Member has reached an agreement with any other country or countries on issues related to technical regulations, standards or conformity assessment procedures which may have a significant effect on trade, at least one Member party to the agreement shall notify other Members through the Secretariat of the products to be covered by the agreement and include a brief description of the agreement. Members concerned are encouraged to enter, upon request, into consultations with other Members for the purposes of concluding similar agreements or of

arranging for their participation in such agreements.

10.8 Nothing in this Agreement shall be construed as requiring:

- 10.8.1 the publication of texts other than in the language of the Member;
- 10.8.2 the provision of particulars or copies of drafts other than in the language of the Member except as stated in paragraph 5; or
- 10.8.3 Members to furnish any information, the disclosure of which they consider contrary to their essential security interests.

10.9 Notifications to the Secretariat shall be in English, French or Spanish.

10.10 Members shall designate a single central government authority that is responsible for the implementation on the national level of the provisions concerning notification procedures under this Agreement except those included in Annex 3.

10.11 If, however, for legal or administrative reasons the responsibility for notification procedures is divided among two or more central government authorities, the Member concerned shall provide to the other Members complete and unambiguous information on the scope of responsibility of each of these authorities.

ANNEX 1

TERMS AND THEIR DEFINITIONS FOR THE PURPOSE OF THIS AGREEMENT

The terms presented in the sixth edition of the ISO/IEC Guide 2: 1991, General Terms and Their Definitions Concerning Standardization and Related Activities, shall, when used in this Agreement, have the same meaning as given in the definitions in the said Guide taking into account that services are excluded from the coverage of this Agreement.

For the purpose of this Agreement, however, the following definitions shall apply:

1. *Technical regulation*

Document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory. 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.

Explanatory note

The definition in ISO/IEC Guide 2 is not self-contained, but based on the so-called "building block" system.

2. *Standard*

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. 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.

Explanatory note

The terms as defined in ISO/IEC Guide 2 cover products, processes and services. This Agreement deals only with technical regulations, standards and conformity assessment procedures related to products or processes and production methods. Standards as defined by ISO/IEC Guide 2 may be mandatory or voluntary. For the purpose of this Agreement standards are defined as voluntary and technical regulations as mandatory documents. Standards prepared by the international standardization community are based on consensus. This Agreement covers also documents that are not based on consensus.

3. *Conformity assessment procedures*

Any procedure used, directly or indirectly, to determine that relevant requirements in technical regulations or standards are fulfilled.

Explanatory note

Conformity assessment procedures include, *inter alia*, procedures for sampling, testing and inspection; evaluation, verification and assurance of conformity; registration, accreditation and approval as well as their combinations.

4. *International body or system*

Body or system whose membership is open to the relevant bodies of at least all Members.

5. *Regional body or system*

Body or system whose membership is open to the relevant bodies of only some of the Members.

6. *Central government body*

Central government, its ministries and departments or any body subject to the control of the central government in respect of the activity in question.

Explanatory note:

In the case of the European Communities the provisions governing central government bodies apply. However, regional bodies or conformity assessment systems may be established within the European Communities, and in such cases would be subject to the provisions of this Agreement on regional bodies or conformity assessment systems.

7. *Local government body*

Government other than a central government (e.g. states, provinces, Länder, cantons, municipalities, etc.), its ministries or departments or any body subject to the control of such a government in respect of the activity in question.

8. *Non-governmental body*

Body other than a central government body or a local government body, including a non-governmental body which has legal power to enforce a technical regulation.

ANNEX 3 TO WTO AGREEMENT

CODE OF GOOD PRACTICE FOR THE PREPARATION, ADOPTION AND APPLICATION OF STANDARDS

General Provisions

- A. For the purposes of this Code the definitions in Annex 1 of this Agreement shall apply.
- B. This Code is open to acceptance by any standardizing body within the territory of a Member of the WTO, whether a central government body, a local government body, or a non-governmental body; to any governmental regional standardizing body one or more members of which are Members of the WTO; and to any non-governmental regional standardizing body one or more members of which are situated within the territory of a Member of the WTO (referred to in this Code collectively as "standardizing bodies" and individually as "the standardizing body").
- C. Standardizing bodies that have accepted or withdrawn from this Code shall notify this fact to the ISO/IEC Information Centre in Geneva. The notification shall include the name and address of the body concerned and the scope of its current and expected standardization activities. The notification may be sent either directly to the ISO/IEC Information Centre, or through the national member body of ISO/IEC or, preferably, through the relevant national member or international affiliate of ISONET, as appropriate.

SUBSTANTIVE PROVISIONS

- D. In respect of standards, the standardizing body shall accord treatment to products originating in the territory of any other Member of the WTO no less favourable than that accorded to like products of national origin and to like products originating in any other country.
- E. The standardizing body shall ensure that standards are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade.
- F. Where international standards exist or their completion is imminent, the standardizing body shall use them, or the relevant parts of them, as a basis for the standards it develops, except where such international standards or relevant parts would be ineffective or inappropriate, for instance, because of an insufficient level of protection or fundamental climatic or geographical factors or fundamental technological problems.
- G. With a view to harmonizing standards on as wide a basis as possible, the standardizing body shall, in an appropriate way, play a full part, within the limits of its resources, in the preparation by relevant international standardizing bodies of international standards regarding subject matter for which it either has adopted, or expects to adopt, standards. For standardizing bodies within the territory of a Member, participation in a particular international standardization activity shall, whenever possible, take place through one delegation representing all standardizing bodies in the territory that have adopted, or expect to adopt, standards for the subject matter to which the international standardization activity relates.
- H. The standardizing body within the territory of a Member shall make every effort to avoid duplication of, or overlap with, the work of other standardizing bodies in the national territory or with the work of relevant international or regional standardizing bodies. They shall also make every effort to achieve a national consensus on the standards they develop. Likewise the regional standardizing body shall make every effort to avoid duplication of, or overlap with, the work of relevant international standardizing bodies.
- I. Wherever appropriate, the standardizing body shall specify standards based on product requirements in terms of performance rather than design or descriptive characteristics.

J. At least once every six months, the standardizing body shall publish a work programme containing its name and address, the standards it is currently preparing and the standards which it has adopted in the preceding period. A standard is under preparation from the moment a decision has been taken to develop a standard until that standard has been adopted. The titles of specific draft standards shall, upon request, be provided in English, French or Spanish. A notice of the existence of the work programme shall be published in a national or, as the case may be, regional publication of standardization activities.

The work programme shall for each standard indicate, in accordance with any ISONET rules, the classification relevant to the subject matter, the stage attained in the standard's development, and the references of any international standards taken as a basis. No later than at the time of publication of its work programme, the standardizing body shall notify the existence thereof to the ISO/IEC Information Centre in Geneva.

The notification shall contain the name and address of the standardizing body, the name and issue of the publication in which the work programme is published, the period to which the work programme applies, its price (if any), and how and where it can be obtained. The notification may be sent directly to the ISO/IEC Information Centre, or, preferably, through the relevant national member or international affiliate of ISONET, as appropriate.

K. The national member of ISO/IEC shall make every effort to become a member of ISONET or to appoint another body to become a member as well as to acquire the most advanced membership type possible for the ISONET member. Other standardizing bodies shall make every effort to associate themselves with the ISONET member.

L. Before adopting a standard, the standardizing body shall allow a period of at least 60 days for the submission of comments on the draft standard by interested parties within the territory of a Member of the WTO. This period may, however, be shortened in cases where urgent problems of safety, health or environment arise or threaten to arise. No later than at the start of the comment period, the standardizing body shall publish a notice announcing the period for commenting in the publication referred to in paragraph J. Such notification shall include, as far as practicable, whether the draft standard deviates from relevant international standards.

M. On the request of any interested party within the territory of a Member of the WTO, the standardizing body shall promptly provide, or arrange to provide, a copy of a draft standard which it has submitted for comments. Any fees charged for this service shall, apart from the real cost of delivery, be the same for foreign and domestic parties.

N. The standardizing body shall take into account, in the further processing of the standard, the comments received during the period for commenting. Comments received through standardizing bodies that have accepted this Code of Good Practice shall, if so requested, be replied to as promptly as possible. The reply shall include an explanation why a deviation from relevant international standards is necessary.

O. Once the standard has been adopted, it shall be promptly published.

P. On the request of any interested party within the territory of a Member of the WTO, the standardizing body shall promptly provide, or arrange to provide, a copy of its most recent work programme or of a standard which it produced. Any fees charged for this service shall, apart from the real cost of delivery, be the same for foreign and domestic parties.

Q. The standardizing body shall afford sympathetic consideration to, and adequate opportunity for, consultation regarding representations with respect to the operation of this Code presented by standardizing bodies that have accepted this Code of Good Practice. It shall make an objective effort to solve any complaints.