

MAPPING DIGITAL MEDIA: TECHNICAL STANDARDS IN TERRESTRIAL TELEVISION

By David Wood



Technical Standards in Terrestrial Television

WRITTEN BY

David Wood¹

Technical standards apply in many fields, including the media industry. They evolve in response to new technologies that aim both to satisfy and to generate consumer demand.

Standards can help to maximize choice and competition for goods and services, and they enhance access to goods and services of public value—including public service media. Other things being equal, the more widely a standard is used, the greater the overall benefit to consumers and citizens.

Common international standards benefit less developed countries, by easing the pressure on them to make difficult and sometimes political decisions over which standard to adopt.

However, the market will not on its own guarantee successful standardization. A broad range of stakeholder engagement in international standards discussions, and enlightened leadership of standard-setting bodies, is essential if we are to follow a path that favors the global public interest rather than national or company interests.

1. David Wood is Deputy Director, Technology and Development, at the European Broadcasting Union (EBU).

Mapping Digital Media

The values that underpin good journalism, the need of citizens for reliable and abundant information, and the importance of such information for a healthy society and a robust democracy: these are perennial, and provide compass-bearings for anyone trying to make sense of current changes across the media landscape.

The standards in the profession are in the process of being set. Most of the effects on journalism imposed by new technology are shaped in the most developed societies, but these changes are equally influencing the media in less developed societies.

The Media Program of the Open Society Foundations has seen how changes and continuity affect the media in different places, redefining the way they can operate sustainably while staying true to values of pluralism and diversity, transparency and accountability, editorial independence, freedom of expression and information, public service, and high professional standards.

The **Mapping Digital Media** project, which examines these changes in-depth, aims to build bridges between researchers and policy-makers, activists, academics and standard-setters across the world.

The project assesses, in the light of these values, the global opportunities and risks that are created for media by the following developments:

- the switchover from analog broadcasting to digital broadcasting
- growth of new media platforms as sources of news
- convergence of traditional broadcasting with telecommunications.

As part of this endeavor, the Open Society Media Program has commissioned introductory papers on a range of issues, topics, policies and technologies that are important for understanding these processes. Each paper in the **Reference Series** is authored by a recognised expert, academic or experienced activist, and is written with as little jargon as the subject permits.

The reference series accompanies reports into the impact of digitization in 60 countries across the world. Produced by local researchers and partner organizations in each country, these reports examine how these changes affect the core democratic service that any media system should provide – news about political, economic and social affairs. Cumulatively, these reports will provide a much-needed resource on the democratic role of digital media.

The **Mapping Digital Media** project builds policy capacity in countries where this is less developed, encouraging stakeholders to participate and influence change. At the same time, this research creates a knowledge base, laying foundations for advocacy work, building capacity and enhancing debate.

The **Mapping Digital Media** is a project of the Open Society Media Program, in collaboration with the Open Society Information Program.

MAPPING DIGITAL MEDIA EDITORS

Marius Dragomir and Mark Thompson (Open Society Media Program).

EDITORIAL COMMISSION

Yuen-Ying Chan, Christian S. Nissen, Dušan Reljić, Russell Southwood, Michael Starks, Damian Tambini.

The Editorial Commission is an advisory body. Its members are not responsible for the information or assessments contained in the Mapping Digital Media texts.

OPEN SOCIETY MEDIA PROGRAM TEAM

Meijinder Kaur, program assistant; Morris Lipson, senior legal advisor; Miguel Castro, special projects manager; and Gordana Jankovic, director

OPEN SOCIETY INFORMATION PROGRAM TEAM

Vera Franz, senior program manager; Darius Cuplinskas, director

The views expressed in this publication do not represent, or necessarily reflect, the views of the Open Society Foundations.

Contents

I. Introduction. What Are Technical Standards?	6
II. How Are Standards Established?	9
III. Bandwidth and Quality: Driving Forces Behind Standardization	11
IV. Terrestrial Television Standards Around the World	13
V. Where Are We Now?.....	16
VI. The Public Interest	18
VII. Conclusion	20
Glossary of Key Terms.....	21

I. Introduction.

What Are Technical Standards?

Media technology is shaped by the technical standardization process. This paper is a short introduction to this process as it applies to terrestrial television.

The term ‘technical standard’ is used in different ways, and can mean different things. Broadly, it describes the common technological ‘recipe’ underpinning particular hardware equipment, or software interfaces and applications. Technical standards define the capability of the equipment or system, and the extent of the services it provides.

Technical standards apply in many fields, including the media industry, and can be adopted at various levels. They may be applied to a particular company’s products, or across an entire industrial sector. Equally, they may be adhered to or enforced regionally, nationally, or globally. Technical standards at all these levels are found in the media world today.

The public interest is usually taken to lie in the provision of goods and services of the ‘highest quality’ at the ‘lowest cost’. These come, in economists’ terms, with ‘perfect competition’ and ‘perfect (publicly available) information’. Common technical standards may, in some cases, help to approach these goals. But there is no universal and simple rule about whether or not common standards are in the public interest, because there are many variables involved.

A decision on where and how to submit a system for standardization depends on many factors. These include how likely the submission is to be successful, and how much money it stands to make if it is not submitted – in other words, if there is no wider standardization.

It can also depend on the participants’ negotiating skills and capacity to agree and compromise within standard-setting forums. These may be influenced by the existence and possession of manufacturing patents.

The need for, and value of, common national, regional, or global standards in the media (rather than company-specific standards) is a complex and contested policy issue. One view is that industry-wide standards—agreed and evolving in a controlled way—are in the public interest because, among other things, they create a larger competitive market for manufacturers, and make it easier for consumers to choose.

Against this is the alternative view that industry-wide standards discourage innovation and ‘freeze’ technology. According to this view, only the freedom to produce and sell any media system can guarantee that innovation and creativity will flourish. While this view does not mean doing away with standards altogether, it does support the need for any adherence to be voluntary rather than enforced.

The related concept or policy of **technological neutrality** is that no regulation should specify particular technical solutions. This means that specific national, regional, or global standards must not be a legal requirement for a given kind of service—though common standards may exist if they are the result of market forces. A national or regional policy of technological neutrality may be attractive for regulators because it is easier to implement. They do not have to understand the technology landscape themselves, and it is time-independent. They also do not create friends or enemies in industry, and can avoid the burden of responsibility for failure. But it can result in the fragmentation of standards, and restrict market potential for new systems.

The term **interoperability** is associated with standards. It is used in one sense to mean that a manufacturer’s equipment can work successfully in conjunction with another manufacturer’s equipment. This can include certain receivers being able to work with signals provided by certain transmitters. It can also mean equipment from different manufacturers being able to be connected successfully. Thus, depending on the context, ‘interoperability’ can be the (beneficial) consequence of using common standards. The term **compatibility** can also be used to denote equipment by different manufacturers working successfully together.

Common technical standards can affect consumer rights, citizenship, diversity and even democracy. **Consumer rights** encompass the right to know what the product you buy will deliver, and whether it is ‘fit for purpose’. Technical standards are an enabling mechanism for these. The competitive environment they engender helps the wider provision of consumer information. When all manufacturers use the same standard, the basis for competition becomes features, quality, style, information, and cost—rather than the ‘captive market’.

Technical standards can help create wider ‘shared experiences’ and bring greater accessibility to media content that the public needs to know about. They enlarge accessibility because services tend to grow in number with technical standards. Furthermore, equipment becomes more widely available, more secure, and at lower cost. However, the market will not on its own guarantee the social benefits of standardization, as profit-maximization might be best served through protective measures, as discussed further below.

Standards can allow equipment manufacturers or suppliers to make media equipment that can be sold to the public at large, or the content-making community, in the knowledge that it will provide the service expected, or will inter-connect successfully with other manufacturers’ equipment that uses the same standard.

Common industry-wide standards can help consumers, because the number of available manufacturers can increase, thus improving choice and value for money. They can also help consumers to make informed decisions and choices about which types of equipment will best fit their needs.

Common industry-wide standards can help media content providers, because they can reach a mass audience without providing multiple versions of their content. On the production side, standardized equipment can help create cheaper and more accessible facilities for program-making. Common industry-wide standards can also help the manufacturing community at large by enlarging their market.

However, where a manufacturer or service provider actively seeks a ‘captive market’ for goods or services, having standards which are company-specific (rather than industry-wide) can protect them from competition. Computer operating systems such as Windows and Apple’s OS may have served to create captive markets.

In cases where the manufacturer or the service provider needs very strict control and monitoring—for example, because of the inclusion of content management systems (CMSs) such as conditional access for pay-TV—the use of company-specific standards can make this easier to achieve.

There is thus no definitive ‘good’ or ‘bad’ argument about national, regional, or global standards. Different perspectives, different market positions, and different national situations influence what is ‘best’. Overall, the argument probably falls in favor of standards, but there is a balance to be drawn.

If all other things are equal, the more widely a standard is used, the greater the overall benefit for society, from the perspective of both consumer and citizen welfare. Standards help to maximize choice and competition for goods and services, and they enhance access to goods and services of public value—including public service media. For manufacturers, the potential costs of increased competition may be offset by the market expansion that standards can bring.

Nevertheless, standards can impede both profitability and innovation, and the road to standardization tends to be long and slow—which can have a further harmful effect on technology development. Optimizing the standardization process itself is therefore crucial if society is to realize its benefits.

II. How Are Standards Established?

New systems and standards begin life in the laboratory. They are discussed, built and rebuilt, and then emerge as an individual or company proposal. From there they are either kept within the company as a company standard, or they can be submitted by the company to one or more type of industry body for wider use. Companies are members of standards bodies.

Awareness that a new standard is needed or viable often follows improvements in integrated circuit capability ('Moore's law').² A new level of sophistication in consumer equipment can become practical. Engineers can be aware of this and act on it to create a new system.

There is a 'tree' of standards organizations—and some duplication of effort across them.

At the highest level, there are worldwide standards bodies: the ITU (International Telecommunication Union),³ the IEC (International Electrotechnical Commission),⁴ and the ISO (International Organization for Standardization).⁵ Each has a somewhat different field of competence, but they are all involved to some degree in setting and defining global media standards.

There are variations in the ways the world standards bodies operate, though as we shall see (in relation to MPEG), at times they work in concert. The way each body works, and how it is led, influences its success in agreeing and making standards.

There are also regional standards bodies, such as ETSI (European Telecommunications Standards Institute). Such bodies tend to mirror regionally the work of the worldwide bodies cited above. And there are national

2. According to Gordon E. Moore, writing in 1965, the number of transistors that can be placed inexpensively on an integrated circuit doubles approximately every 18 months to two years.

3. See www.itu.int

4. See www.iec.ch

5. See www.iso.ch

standards bodies, such as the American National Standards Institute, the British Standards Institute, and the German Standards Institute, to name but three.

These standard-setting bodies have procedural rules for the submission of proposals and allow a long time for deliberation. Due in part to this formalism, there is also a growing number of ‘alliances’ that create standards among themselves. Once agreed in an alliance, a standard may simply be announced, or submitted for consideration to one of the official standards bodies. One example is the **DVB Project**,⁶ which groups together about 250 companies, agrees digital television standards, and then passes the standards to the official bodies as a package for standardization.⁷

As well as attempting to counter the formalism and slowness of official bodies, alliances may in some cases be formed to ensure that standards are commercially viable and not just technically superior. Historical precedent suggests that official bodies are not well placed to ensure this. Hence, the DVB Project was formed as an alliance on the principle that pre-standard-setting work by its ‘Technical Module’ would be preceded by requirements drawn up by its ‘Commercial Module’.

In today’s internet world, there is an alternative route to standards, whereby an alliance may post a first version of a standard on the web, along with an open call for others to improve it. This is sometimes called an **open source process**. Over time, such a system can evolve and attract widespread public use, and thus effectively become a standard. This approach has not yet been used for broadcast media standards.

6. See www.dvb.org

7. Broadcast standards are discussed in the EBU/Cenelec/ETSI Joint Technical Committee, within ETSI. (Cenelec is the European Committee for Electrotechnical Standardization.)

III. Bandwidth and Quality: Driving Forces Behind Standardization

An essential currency of digital broadcasting is **bandwidth**: the space that a signal needs to occupy in the radio spectrum (or the equivalent on the internet). This affects the cost and practicality of broadcasting. Bandwidth efficiency is therefore of significant value and importance, and much of the evolution of technology and standards is geared towards improving it by squeezing more signals into the same space.

One way to do this is to develop ever better ways of compressing TV and audio signals. This is essentially done by taking out the elements in the picture or sound that the eye or ear does not notice, thus removing unnoticed ‘redundancy’. The technology for achieving this has gradually improved.

Another currency of broadcasting is the viewer/listener experience, or ‘picture and sound quality’. The ‘value’ of sound and video quality, and the role it plays in the media experience, are sometimes misunderstood. Although picture and sound quality may appear to be of secondary importance, their impact is extremely significant. While they may not influence our initial decision to watch or listen, they do affect how long we watch or listen, how much we become emotionally involved in the content, and how we remember it afterwards. The higher the technical quality, the greater is the gain for both program maker and viewer (though for the viewer this may be a subliminal benefit).

Because of this, and our continuous search for something better than we have now, humankind is set on a course to seek ever higher picture and sound quality from broadcasting (and other media delivery means as well). Added to this, manufacturers always need new products to sell, and this fuels the trajectory of systems and standards of ever higher audio-visual quality. Quality affects the ‘relationship’ viewers have with broadcast content, and expands both the supply and demand for services.

Furthermore, the television (or radio) digital broadcast channel is a large container into which you can place whatever you wish in terms of picture quality or type of service. Digital technology renders the delivery system more flexible, making it much easier to adjust picture quality at the delivery end. This enables

broadcasters or policy makers to prioritize output according to different variables. For example, by ‘winding down’ picture quality for each TV or radio channel, more TV or radio channels can be broadcast—if quantity is considered more important than quality. Decisions are not infrequently being taken in favor of lower quality television and greater choice, forgetting the corresponding loss in viewing time, content retention, and viewer involvement.

IV. Terrestrial Television Standards Around the World

Technical standards for broadcast media systems have historically been developed in the major economic regions of the world: Europe, Japan, and the United States. In recent years, standards have also been developed by China and some in Korea. These five are likely to remain the major actors in digital broadcast standards for the foreseeable future, because they have the research and development capacity to do the groundwork needed.

Politics and economics can play a part in the decisions to create and use certain standards. For example, China had a number of reasons for developing its own standard, but among them was to avoid paying massive patent fees to other regions of the world. During the Cold War, central and eastern European countries chose the SECAM standard for analog colour television—which was developed in France in the 1960s—at the directive of the USSR, only to switch to the German-developed PAL standard in the 1990s as a gesture of independence. South American countries have vacillated between different standards choices, following lobbying by different developed countries.

The more regional or national groups there are, the harder it is to reach a consensus on a worldwide common standard. At the same time, the choice of system becomes wider and harder for the rest of the world outside the regions. The decisions they make are often, of necessity, based on a complex mixture of judgements on technology, trading terms, and international relations.

In principle, all five groupings meet in the worldwide standards bodies: the ISO, IEC, and ITU. They have worked together on common standards for one important part of the technology that digital television needs, namely for **video and audio compression technology**. A series of worldwide common standards have been successfully achieved in this respect. ‘Success’ can be defined as the creation of a single standard by collective deliberation, rather than simply cataloguing multiple standards that are in use.

Every six to nine years, the Moving Pictures Experts Group (**MPEG**) and its partners define a new standard for a compression system that has improved in efficiency compared with its predecessor. The usual code

names for these are MPEG-1, MPEG-2, MPEG-4, and MPEG-4 AVC. The next two to three years will bring a further standard, MPEG-4 HEVC.

Technology development in this field, as in other aspects of digital broadcasting, occurs in repeating cycles. Unless countries or regions choose a technology at the same time, there is a risk that they will choose different generations of systems, and standards in use will fragment as a result. The MPEG family has been a great success story, while at the same time it has contributed to some fragmentation of standards, because of the different timings of systems choices that nations make. A country will naturally choose a best technology at the time it wishes to introduce it. If these occasions are separated by some years, the choices they make can be different.

A national alliance in the United States—the Advanced Television Systems Committee (**ATSC**)—was established in the mid 1980s by the bodies in North America with an interest in television standards, such as the National Association of Broadcasters and others. It was set up to devise a way to broadcast terrestrial television in high definition.⁸ Towards the end of the 1990s, the ATSC digital television standard was agreed and ready. The ATSC system was rolled out over the last decade in the United States, and some other countries including Canada and Korea have also adopted the system. Inside the ATSC system is the MPEG worldwide compression system, but this was not the totality of what was needed for a broadcast system, and it was wrapped in a ‘coat’ (the outer elements of the system which relate to the transmission medium) that was specific to the ATSC.

In Europe, the **DVB** (Digital Video Broadcasting) **Project** was established in 1993 by the European Broadcasting Union and a group of concerned manufacturers, satellite operators, and regulators. Its objectives were related to those of the ATSC, but somewhat larger. It aimed to develop a family of standards for digital television for all qualities from SDTV to HDTV, and for a range of delivery platforms (terrestrial, satellite, and cable). During the 1990s, a series of DVB standards were agreed, and membership of the project became worldwide. European countries and many others now use the DVB systems. Underpinning them was the common MPEG compression technology, but this time in a DVB ‘coat’.

In Japan, a third approach was developed for terrestrial digital television by a grouping of broadcasters and manufacturers. This is **ISDB-T** (Integrated Services Digital Broadcasting – Terrestrial), which also includes MPEG. It can be seen as drawing on the earlier technology from other regions but adding more sophistication. It is used in Japan and extensively in Latin America, albeit with some exceptions.

Following the ISDB-T system, **CMMB** (China Multimedia Mobile Broadcasting) was developed in China. It has a range of options which are similar to a combination of the ATSC system and the DVB systems, but is incompatible with them.

8. See www.atsc.org

Most recently, and following the cyclical pattern, the DVB Project has developed a series of new generation systems for satellite, cable, and terrestrial broadcasting with performance and functionality improvements. These have been standardized and will be used in Europe, Africa, and elsewhere.

Companies, countries, or regions that develop their own systems do so for a variety of reasons, such as helping their own industry or company, raising national or regional pride, and extending their influence in their own and other countries. Countries that have to choose a standard they have not developed themselves do so, likewise, for a mix of economic and cultural reasons. These may include the perceived economic necessity of adopting the systems of a powerful neighbor (as is the case for Mexico), and the perceived cultural necessity of choosing a different system from the neighbor's (as is the case for Cuba).

All of the (total) systems completed have been submitted over the last 15 years to the ITU as candidates for worldwide standards. In each case, the legacy of equipment already in use and the range of distinct national policies have made it impossible for the ITU to agree a single common worldwide system. As a result, the ITU has only a catalogue of alternative national or regional systems for digital terrestrial television.

One clear (and natural) trend is that each system has drawn on the technologies of the system developed earlier in another nation or region. Each has learned from, and built on, the one before. This means there are continuing improvements in performance and functionality as each cycle turns.

In spite of these improvements, however, the end result in all cases is relatively similar for the viewer wherever he or she is in the world. Viewers switch on their televisions and watch programs in (digital) HDTV or SDTV. From a global perspective, for ordinary people, distinctions in the technology that achieve much the same result can be quite unfathomable.

V. Where Are We Now?

The evolution of standards is fuelled by the emergence of new technologies aimed, in varying degrees, at both satisfying and generating consumer demand for higher quality services. Is the trajectory driven more by consumers' desire for something better, or by companies' desire to shape consumer demand? There is no single answer.

Today, and in the near term, there is a slow transition of television production and broadcasting, using digital technology, from 'standard definition' television (**SDTV**) that has been in existence for 40 years or more, to digital 'high definition' television (**HDTV**), which gives sharper pictures. Also available is **3D-TV**, which gives some depth or volume to HDTV or near-HDTV pictures.

Pre-standardization for 3D-TV is underway in the DVB Project, and the next decade will see moves at the ITU to standardize two levels of **Ultra High Definition Television**. In the U.S., work has begun on a next-generation ATSC system (ATSC 2.0). Next-generation systems are also under development in Europe (DVB-NGH) and Japan (ISDB-T2).

(In passing, we may note that the transition to digital radio has been relatively slow in most countries, but here too the process may be inevitable. Digital radio will deliver more flexibility for sound quality, better reception, and easier routes to finding stations. While this paper focuses on digital television standards, some of the driving forces and political dimensions are transferrable to radio.)

'Convergence' has already seen a proliferation of platforms and devices that combine digital television with internet services (**Hybrid Broadcasting** or **Connected TV**). Such combined modes of delivery are likely to expand in the near future, because they offer a more involving experience and, for example, the potential to combine broadcasting and social networks.

Beyond that, the next ten to 20 years will see the development of several levels of Ultra High Definition Television (**UHDTV**), and ever more natural-looking 3D television technologies. Unchecked, this continued improvement in the viewing and listening experience would need to be coupled with an increase in bandwidth capacity, so the trajectory of technological innovation focuses on improving both the quality

and the bandwidth efficiency of digital services. Both these developments are necessarily restricted by the availability and affordability of receiving devices.

The development of systems for providing rich, interactive multimedia as part of the earlier broadcast service itself—so-called ‘interactive television’ systems, also known as ‘application programming interfaces’ or APIs—was a long process. A pan-European program in the 1990s under the DVB Project to create a common system (MHP or the Multimedia Home Platform) took many years to reach a conclusion. By the time it was completed, many other earlier systems (Open TV, MHEG5, and others) were in use, and also MHP was relatively complex by comparison. The failure of ‘interactive television’ to sweep the world was probably due in part to the fragmentation of standards.⁹

Today, the technology exists to go further and combine interactive television with the content from broadband internet on a single screen. An ever-growing number of systems can do this: Open Hybrid Television (Korea), Hybridcast (Japan), You View (UK), Connected TV (UK), MHEG-5 (UK), HbbTV (France and Germany), MHP1.2 (Italy), TV Widgets (US), Google TV (US), AppleTV (US), LIME (ITU), SmartTV (Korea), and more.

The technology to realize the great dream of convergence between television broadcasting and internet media already exists, but fulfilment may be delayed by the large number of different technical systems. For, this time, various systems are not just being developed in different regions or nations; some regions or nations have a multiplicity of internal systems that may have some degree of success locally, but at the same time hinder efforts at obtaining industry-wide standards. The next generation of digital television—which will probably center on ‘hybrid broadcasting’, combining broadcast and internet—looks likely to be dominated by an ever-greater tendency to adopt company-specific standards.

9. As with teletext, interactive TV was more successful in Europe than in the United States.

VI. The Public Interest

There are many inter-related variables in considering policy for common standards, and it is not easy to see where the balance of public interest lies.

For example, any manufacturer should in principle be able to develop products based on ‘common standard’ technology. To ensure this, standards bodies include a clause, as a condition of inclusion of a technology in the standard, that anyone who holds patents on something in the standard must make it available to all on fair, reasonable, and non-discriminatory terms (“FRAND”). But the notion of ‘reasonable’ is not defined, and it means different things to different people. There have even been circumstances in which the license fee for ‘open standards’ is actually higher than for a ‘proprietary standard’ that does a similar thing.

It is also difficult to see where the public interest lies in respect to the obsolescence that is generated by continual new standards. Emerging standards are a boost to sales and manufacturers, but they may be seen as an unnecessary environmental load and a burden on low-income consumers.

There is also the issue of human nature to consider. If a group of individual architects are commissioned to design and build the ‘best’ house, every house will be different. If we want a single ‘best’ house (or broadcast system), we have to ask or even insist that the architects (or engineers) work together. Policymakers should recognize the importance of cooperation in developing standards and take steps to create conditions that maximize the efficiency and effectiveness of standardization processes. For instance, the standard-setting bodies should all work in a collaborative way, rather than having delegates arrive at meetings with a national or company standard in their pocket from which they are not allowed to deviate. The methods and procedures of the standard-setting body need to encourage discussion of alternative approaches, and a degree of free thinking, rather than stipulate that only documents submitted well in advance of the meeting can be discussed.

One possible route forward is to examine what has happened in the past. This may shed some light on where the balance of the public interest lies. What does the record show?

1. Almost all of the most successful systems, in terms of providing the public with the highest quality, maximum information, and the lowest cost, have used technical standards that are common across much of the world, such as analog radio, gsm, and analog television.
2. Proprietary (company standard) systems can be very successful if a manufacturer succeeds in dominating the market. There can be one rich winner and many losers. For the industry as a whole, this is not a desirable outcome.
3. Who pays for a system that fails? It is a combination of the manufacturers who made the equipment, and the public who bought it. Usually the greater sum comes from the public who bought it.
4. Common international standards greatly benefit those countries outside the major economic regions, because they are not forced to make difficult and sometimes political decisions over which standard to adopt. A developing country may be lobbied by many manufacturers and even administrations from developed countries in an effort to 'woo' them into choosing their standard. Whom, the developing country has to decide, should they please, and whom should they risk angering?
5. The standards bodies that are most successful are those with enlightened and strong leadership, and which are organized so that participants work collaboratively. The methods and procedures of standards bodies which have applied in successful cases need to be applied more widely

VII. Conclusion

Though there are justifications in some circumstances for company-specific or national standards, the greater public value is for common industry-wide standards with as broad an area of usage as possible. The greater production volume and market size that results from standardization maximizes economies of scale, creates a level playing field for international competition, and improves access and choice for consumers.

Part of the recipe for achieving common standards must be to avoid policy dogmatism and understand the trajectory and cyclical elements of digital media development. A global approach to standardization is required, but one that appreciates where different parts of the world are, with respect to their needs and services.

The obstacles must also be understood. Common standards will become more difficult to achieve as more regions and countries gain the technical capacity to develop them; the more people around the table, the more difficult agreement can be. Furthermore, technology is developed in cycles; if different countries proceed at different speeds, there is a risk that their choice of standards will differ accordingly. Standardization does to a degree slow down innovation.

Those working in the media industries need to be aware of the development of technical standards. They need to understand the forces that influence them, and judge whether they are moving forward in the public good. A broad range of stakeholder engagement in international standards discussions, and enlightened leadership of standard-setting bodies, is essential if we are to follow a path that favors the global public interest rather than national or company interests.

There should be greater public and political awareness of the impact that technical standards have, and greater willingness to work together with other companies, nations, or regions on common technical standards.

Even in the absence of common standards for all media systems, some success is better for the world than none, and can demonstrate by example what is achievable. As the evolution of media technology is a never-ending story, it is never too late to continue the quest for common standards.

Glossary of Key Terms

ANSI	American National Standards Institute
ATSC	Advanced Television Systems Committee
BSI	British Standards Institute
CMMB	China Multimedia Mobile Broadcasting
DIN	German Standards Institute (<i>Deutsches Institut für Normung</i>)
DVB	Digital Video Broadcasting
ETSI	European Telecommunications Standards Institute
HDTV	High Definition Television
IEC	International Electrotechnical Commission
ISDB-T	Integrated Services Digital Broadcasting—Terrestrial
ISO	International Standards Organization
ITU	International Telecommunication Union
MPEG	Moving Picture Experts Group (a working group of experts formed by the ISO and IEC in 1988 to set standards for audio and video compression)
SDTV	Standard Definition Television
UHDTV	Ultra-High Definition Television
3D-TV	3D Television

Mapping Digital Media is a project of the **Open Society Media Program** and the **Open Society Information Program**.

Open Society Media Program

The Media Program works globally to support independent and professional media as crucial players for informing citizens and allowing for their democratic participation in debate. The program provides operational and developmental support to independent media outlets and networks around the world, proposes engaging media policies, and engages in efforts towards improving media laws and creating an enabling legal environment for good, brave and enterprising journalism to flourish. In order to promote transparency and accountability, and tackle issues of organized crime and corruption the Program also fosters quality investigative journalism.

Open Society Information Program

The Open Society Information Program works to increase public access to knowledge, facilitate civil society communication, and protect civil liberties and the freedom to communicate in the digital environment. The Program pays particular attention to the information needs of disadvantaged groups and people in less developed parts of the world. The Program also uses new tools and techniques to empower civil society groups in their various international, national, and local efforts to promote open society.

Open Society Foundations

The Open Society Foundations work to build vibrant and tolerant democracies whose governments are accountable to their citizens. Working with local communities in more than 70 countries, the Open Society Foundations support justice and human rights, freedom of expression, and access to public health and education.

For more information:

Open Society Media Program
Open Society Foundation

4th Floor Cambridge House, 100 Cambridge Grove
London, W6 0LE, United Kingdom

mappingdigitalmedia@osf-eu.org
www.mappingdigitalmedia.org
www.soros.org/initiatives/media

Cover Design: Ahlgrim Design Group
Design and Layout: Judit Kovács | Createch Ltd.

