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# THE ROLE OF GOVERNMENT IN TELECOMMUNICATIONS STANDARD-SETTING

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## I. INTRODUCTION: IS THERE STILL A ROLE FOR GOVERNMENT IN STANDARD- SETTING?

Two trends are dominant in telecommunications at the moment. The first is the convergence of networks to form a network of networks;<sup>1</sup> the second is convergence among proprietary network concepts and technologies to form publicly accessible networks. Both trends depend upon the reliable and timely development of standards. Without standards ensuring interoperability of diverse technologies, the benefits of network effects, which make networks increasingly valuable in direct proportion to the number of users, will be diverted and in some cases, never realized or distributed.

Part I of this essay frames the question of whether governments have a useful role to play in standard-setting and explains why this question is relevant and important. Part II examines the continuing role of standards in the modern telecommunications economy and why standards are important. Part III examines the current ways telecommunications standards are set and deployed, including analysis of what works well and what needs improvement. Part IV establishes a framework for analyzing government's role in standard-setting and examines five examples of places where governmental entities elected to in-

tervene or not to intervene. Part V summarizes the characteristics indicating whether a particular standard-setting situation is a good or bad candidate for government involvement.

The standard-setting field is abundantly populated with individual companies, trade associations, professional associations, consortia and others playing prominent roles.<sup>2</sup> Governments also have a role of their own as parties to such treaty organizations as the International Telecommunications Union, an arm of the United Nations. They also work through officially sanctioned delegates, such as the American National Standards Institute's participation in the International Standards Organization. But are governments operating in their sovereign capacities indispensable to this process or should this role be relinquished to the private sector?

As developed below, the answer depends on the circumstances. The problem is identifying which type of situation is best handled by government, and which is best left to the private sector. It is important to view past experiences in order to identify potential future inefficiencies in the allocation of resources. Specifically, if the private sector can do the job better or at least as well, there is no reason to divert government resources away from functions that government alone is qualified or empowered to do. For example, there is no

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tions, George Mason University, 2000), also of Wallman Strategic Consulting, LLC, who contributed to this article.

<sup>1</sup> The development of seamless connections among wireless networks in the U.S. and the connection of those networks to the wireline network are examples of this trend. It has become commonplace for a caller to originate calls on one network that terminate on another. The calling party often is indifferent to whether his or her calls terminate on a wireless or wireline network.

<sup>2</sup> See HARRY NEWTON, *NEWTON'S TELECOM DICTIONARY* 742 (15th ed. 1999) (identifying over 100 private and public entities involved in standard-setting in the telecommunications area).

reason to direct government resources away from enforcement functions and into those standard-setting activities.

A companion question is whether there is continued utility in the organized standard-setting process in light of the advent of *de facto* standards. In other words, is it inappropriate to allow individual companies, or consortia of companies, to set standards that respond to market demand, particularly when there is evidence that the market process is swifter and more timely than organized processes or government action?

Here again, as developed below, there may be extremely important benefits to an organized process that is not controlled, at least ostensibly, by an individual company or companies. The benefits may include greater international propagation and acceptance of compatibilities based on standards and greater openness to competitive “underdogs.” Nevertheless, it would be beneficial from a resource allocation perspective to be able to predict whether a particular standard-setting situation is better handled by the resources of a standard-setting body or should instead be committed to *de facto* standard-setting.

Another critical question to address is whether, even if government standard-setting is slower, less efficient or less responsive to immediate market demands, it is or can be “fairer” in the sense that it is more inclusive, more open to minority views, or protective of minority interests or potential competition from those not yet involved in the specific market. Additionally, government standard-setting may be more responsive to public interest ideals. These factors must also be included in any analysis that seeks to discover when government resources, as opposed to private sector resources, are warranted.

## II. THE CONTINUING AND RENEWED IMPORTANCE OF STANDARDS

Standards have always been important referents in industry, even as the subject matter of the standard-setting process has become more complex. For example, the process for setting standards

governing pipefittings would be relatively accessible and straightforward. The interested parties and those affected by the decision would be relatively easy to identify; the alternatives would be relatively few; and the consequences of one choice over another would be reasonably foreseeable. By contrast, the process by which knowledgeable people arrive at the standards that govern how cable modems work in a network configuration is more complex. The downstream consequences of a standards-setting process on cable modems are potentially uncontrollable. They affect not only the cable business, but also the business of delivering telephony and data services, and possibly the over-the-air broadcast business. The level of technical expertise needed simply to understand the available choices is considerable.

The importance of standards is also increasing, owing to the networked nature of telecommunications and information technology innovations. Standards are needed not only to coordinate outcomes but also to ensure the interoperability of the infrastructure.<sup>3</sup> This underscores the need for compatibility standards as opposed to merely coordinative standards. Coordinative standards—such as a declared standard for railway track gauge agreed upon after a prevailing standard has propagated in the market—serve the purpose of informing new manufacturers or suppliers to the market and thereby encourage future convergence of competing standards.<sup>4</sup> Compliance is not mandatory but may be viewed as a convenience for new manufacturers. These new manufacturers are equally free, however, to divert from the standard to employ a more technically advanced standard or for tactical reasons, to implement a new business plan.<sup>5</sup> Telecommunications and information technology systems, by contrast, demand compatibility with respect to signaling systems and conventions, conversion protocols and modulation in order to work end-to-end.<sup>6</sup> Although paradigm shifts, such as the shift toward internet protocol (“IP”), are still possible, it is important that deployed standards be mandatory rules.<sup>7</sup>

Precisely because these choices matter so much

<sup>3</sup> See Mark. A. Lemley, *Standardizing Government Standard-Setting Policy for Electronic Commerce*, 14 BERKELEY TECH. L. J. 745, 745–46 n.3 (1999) (citing WILLIAM J. CLINTON & ALBERT A. GORE, JR., A FRAMEWORK FOR GLOBAL ECONOMIC COMMERCE (1997) <www.ecommerce.gov/framework.htm> [hereinafter CLINTON & GORE]).

<sup>4</sup> See SUSANNE K. SCHMIDT & RAYMOND WERLE, COORDINATING TECHNOLOGY: STUDIES IN THE INTERNATIONAL STANDARDIZATION OF TELECOMMUNICATIONS 34, 41 (1998).

<sup>5</sup> See *id.* at 34.

<sup>6</sup> See *id.*

<sup>7</sup> See *id.* at 34–35.

in an economy that is dependent upon information technology, renewed attention is being cast on the standard-setting process. The stakes are high not only in the United States for U.S. companies and users, but globally as well. The compatibility of U.S. standards with those adopted in other countries can make or break U.S. entry into foreign markets, and can make or break the viability of foreign competitors in U.S. markets and abroad.

First, it is important to understand exactly what a standard is. "Standard" is defined as a "[g]uideline documentation that reflects agreements on products, practices, or operations by nationally or internationally recognized industrial, professional, trade associations or governmental bodies."<sup>8</sup> Thus, standards may address a variety of areas, including interference prevention, interoperability, and service or product quality. Interestingly, this definition is accompanied in the text by the following annotation: "Note: This concept applies to formal, approved standards, as contrasted to de facto standards and proprietary standards, which are exceptions to this concept."<sup>9</sup> So even in figuring out what this catch-all term "standard" means, experts are constrained to acknowledge that a process that aims to be organized, hierarchical and consensus-based often is not. And the reason for the need to acknowledge this exception that often is the rule underscores what many participants in the standard-setting process and users of standards have figured out by experience: control the standard and be the master of your own success.

Thus, the question of who should set telecommunications standards matters very much to a lot of people. The answer to that question posed in the present tense—"Who sets telecommunications standards?"—is the classic hedging response: "It depends." There are many participants.

In some cases, dominant industry participants set the standard de facto. The emergence of the Microsoft Windows operating system as the fa-

vored desktop operating system is an example of de facto standard-setting.<sup>10</sup> In fact, the skill of capturing enduring market share and thereby achieving commercial success by promulgating de facto standards, is touted as a key criterion that investors should seek and evaluate in candidates for their portfolio.<sup>11</sup>

One key to success is to establish control over a proprietary architecture in a particular value chain. The preferable architecture for this strategy also is open and exhibits high switching costs. An architecture can be both proprietary and open, even though this sounds a bit counterintuitive. It is proprietary when it is developed as the intellectual property of an enterprise; and made open when the proprietor publishes enough information about the architecture and its interfaces to allow other companies to build products, write applications, create services or otherwise add value that interoperates with the proprietor's product. By building dependency on the architecture and everything that relies upon it, the original proprietor makes itself indispensable to users who do not want to endure the headaches and expense of trying something else—hence, high switching costs.

In some cases, the industry that will be using the standard sets the standard. The cable modem standard, known as Data Over Cable Service Interface Specifications ("DOCSIS"), is an example of a standard promulgated in this fashion.<sup>12</sup> DOCSIS was originated by the Multimedia Cable Network System ("MCNS"), which initially was comprised of Comcast, Cox, TCI (now AT&T), Time Warner and CableLabs.<sup>13</sup> CableLabs then administered DOCSIS testing and the certification of vendor equipment for compliance with DOCSIS requirements and interoperability.<sup>14</sup>

In some cases, a group of companies or industries mutually interested in and affected by a proposed standard will act collectively to arrive at a standard, usually under the auspices of a recognized standard-setting group, such as the Telecommunications Industry Association ("TIA").<sup>15</sup>

<sup>8</sup> National Communications System Technology & Standards Division, *Telecommunications: Glossary of Telecommunication Terms* (last modified Aug. 23, 1996) <www.its.blrdoc.gov/fs-1037/>.

<sup>9</sup> *Id.*

<sup>10</sup> See GEOFFREY A. MOORE ET AL., *THE GORILLA GAME* 10–11 (rev. ed. 1999)

<sup>11</sup> *See id.*

<sup>12</sup> *See Cable Modem Standards and Specifications* (visited Mar. 30, 2000) <www.cabledatcomnews.com/cmhc/cmhc3.html>.

<sup>13</sup> *See id.*

<sup>14</sup> *See id.*

<sup>15</sup> *See, e.g., TIA Standards Development* (visited Nov. 23, 1999) <www.csrstds.com/stddev.html>.

Participation in such a group is an important protection against antitrust liability, provided the group follows procedures designed to ensure due process is observed and that the procedures will not be perverted to serve the anticompetitive aim of excluding competitors from a given field.<sup>16</sup> Such procedures are themselves standardized, to some degree, under the supervision of the American National Standards Institute (“ANSI”), which functions as a nonprofit member organization that is supported by private and public sectors.<sup>17</sup> ANSI does not create or develop standards; it views, and if appropriate, approves the work of accredited developers who submit possible future standards on a voluntary basis.<sup>18</sup>

In other cases, companies work outside the established standard-setting organizations in consortia to form standards. An example of this approach is the Bluetooth consortium, a group of companies that has formed a “Special Interest Group” around the project of developing standards for wireless connectivity for communications appliances.<sup>19</sup>

Occasionally, standard-setting work is undertaken by voluntary, private groups established for the purpose of collaborating on a specific type of standard. The Internet Engineering Task Force (“IETF”), the standard-setting arm of the Internet Society, is an example of a private standard-setting group. Founded in 1992, the Internet Society’s members stepped forward to stimulate coordination of technical standards that enabled the growth and promotion of the internet.<sup>20</sup> Because internet standard-setting work did not fall clearly into the responsibility of any existing organization, the IETF initially competed with the International Telecommunications Union (“ITU”). However, these groups eventually agreed to work together on emerging technology standards.<sup>21</sup>

In yet other cases, the federal government, act-

ing on its own or in concert with other national governments or industry members, essentially takes over the standard-setting process. Sometimes the government convenes a federal advisory committee for the purpose of obtaining organized industry and user input, as it did in the case of standards for digital television.<sup>22</sup> Government standard-setting has fallen somewhat out of favor in recent years in the United States, with the Clinton administration promulgating a stated policy against government intervention in standard-setting.<sup>23</sup>

Often, the nature of government involvement is blurred. The ITU operates with heavy de facto input from member countries’ industries and their trade associations.<sup>24</sup> In 1994, the Kyoto Plenipotentiary Conference of the ITU gave formal recognition to the role that private parties long had played and accorded them certain rights and privileges.<sup>25</sup> Hundreds of service providers, equipment manufacturers and user groups now formally participate in the work of the ITU.<sup>26</sup>

With so many interested industry players, trade associations and voluntary associations ready, willing and able to help set standards or take over the process altogether, and with the prevailing bias against government involvement in standard-setting, it is important to ask what role government legitimately should have in this space. The reality is that despite the stated policy preference, the U.S. government remains involved in domestic and international standard-setting. It is therefore important to be able to discern good prospects for such involvement—that is, situations in which the investment of effort by government is likely to do more good than harm—from bad prospects for such involvement.

There are two questions embedded within this question. First, is there anything wrong, generally, with the current processes to the extent that it

<sup>16</sup> See *id.* (summarizing TIA balloting procedures for interested parties).

<sup>17</sup> See *id.* See also *An Introduction to ANSI* (visited Mar. 31, 2000) <web.ansi.org/public/about.html>.

<sup>18</sup> See *id.*

<sup>19</sup> See *Bluetooth Special Interest Group* (visited Apr. 1, 2000) <www.bluetooth.com>.

<sup>20</sup> See *All About the Internet Society* (visited Apr. 1, 2000) <www.isoc.org/isoc/>.

<sup>21</sup> See Sandra Gittlen, *IETF and ITU End Rivalry, Join on Convergence Standards* (visited Apr. 1, 2000) <www.nwfusion.com/news/1999/0715ietf.html>; Joe McGarvey & Peter Judge, *IT Week: IETF and ITU Find Common Ground* (visited

Apr. 1, 2000) <www.zdnet.co.uk/news/1999/30/ns-9171.html>.

<sup>22</sup> See JOEL BRINKLEY, *DEFINING VISION* 30 (1997).

<sup>23</sup> See, e.g., CLINTON & GORE, *supra* note 3, at 20 (“The United States believes that the marketplace, not governments, should determine technical standards and other mechanisms for interoperability.”).

<sup>24</sup> See Krishna Jayakar, *Globalization and the Legitimacy of International Telecommunications Standard-Setting Organizations*, 5 *IND. J. GLOBAL LEG. STUD.* 711, 729 (1998).

<sup>25</sup> See *id.*

<sup>26</sup> See *id.* at 718–21.

successfully produces standards without government involvement? Second, are there cases where government involvement can produce an affirmative benefit?

### III. THE CURRENT PROCESSES: TAKING THE BAD ALONG WITH THE GOOD

Several observations, some of them critical, can be made about the current processes: first, the de facto process by which proprietary technology or intellectual property becomes the prevailing standard has the benefit, from an entrepreneurial, capitalist perspective, of letting the market determine what best serves users' needs.<sup>27</sup> This means, in effect, that the winners in the system are companies that are agile enough to identify opportunities to capture an architecture and powerful enough to sustain control over the architecture. This is nirvana for companies meeting these criteria, but not so great for companies outside the criteria. In one sense, this might be chalked up to the workings of the market, but the alleged "unfairness" of this system has been a source of complaint and concern among the United States' trading partners that have not yet developed a strong culture of entrepreneurship.

Not every complaint deserves redress, of course, and this is likely one of those that does not merit a remedy. The problem is that countries that have such complaints are likely to apply self-help. For example, the government of China recently reportedly determined not to allow Windows 2000 to be installed on government computers so as to encourage the development and deployment of a competing operating system called Red Flag Linux, a product of Chinese software developers.<sup>28</sup> In the end, this problem is essentially a commercial calculation for the owner of the proprietary standard—are the near-term rents that flow from the initial exploitation of the de facto standard greater than the revenues that the company is forced to forgo when, and if, a backlash leads to foreclosure of a market? If they are, then there is no premium in opening the initial process to con-

sultation or other steps that might avert such backlash.

Second, the industry committee process by which standards are developed can take a very long time. The endeavor to establish a cable modem standard had an original goal of December 1995 for publication.<sup>29</sup> Most committee processes are designed to achieve consensus, which can be elusive when the commercial stakes are high and competitive interests are diverse. Often, one or more factions will delay a final outcome in hopes that technological or commercial developments will overtake an undesirable result.

Whether government intervention in a long-lingering standard-setting process can make things go faster is imponderable. It merely sets up the question, "faster than what?"

Third, there is a risk that the process will produce an answer that will end up isolating vendors and fractionalizing the market rather than uniting them behind a standard that is well accepted by users. An example of this is the wireless network standards situation that has ended up producing one set of prevailing standards for the U.S. market (Time Division Multiple Access and Code Division Multiple Access) and another for most of the rest of the world (Global System for Mobile Communications).<sup>30</sup> The result is that travelers from Europe and Asia generally cannot use their mobile handsets in the U.S., and U.S. travelers might as well leave their telephones at home when they travel abroad. Only now in the Third Generation ("3G") of wireless telephony has there developed the real prospect of a more rational result for the future.<sup>31</sup>

### IV. DISCERNING WHEN GOVERNMENT MAY PLAY A BENEFICIAL ROLE: SHOULD, COULDA, WOULD, DIDN'T AND DID

To benefit from past experience, we must first discern when government intervention in a standard-setting process has been beneficial. Charting past experience in terms of when the government did or did not decide to intervene, against

<sup>27</sup> See *id.* at 721.

<sup>28</sup> See David Renniw, *Chinese Fly Red Flag with Ban on Microsoft*, DAILY TELEGRAPH, Jan. 7, 2000, at 16. *But see We'll Keep the Red Flag Operating*, COMPUTING, Jan. 13, 2000 (reporting that China denied banning Windows 2000 from government computers).

<sup>29</sup> See *Cable Modem Standards & Specifications* (visited Mar.

25, 2000) <cabledatcomnews.com/cmhc/cmhc3.html>.

<sup>30</sup> See Coran Carlson, *Economist Oppose Single 3G Standards*, WIRELESS WEEK (Mar. 30, 1998) <www.wirelessweek.com/NEWS/3G/threeg10.htm>

<sup>31</sup> See generally *Industry Settlement Advances Standards Process for Third Generation Wireless Services*, FCC News Release, Mar. 26, 1999.

whether that decision turned out to be wise or beneficial by the best available objective measures, is one useful tool.

The grid below notes cases in which the government did or did not become involved in the standard-setting process and the consequences, judged retrospectively, of that action or the contrary action. Of course, in the real world, there may be gradations of “yes” or “no,” representing various roles that government actors can choose

to play in the standard-setting process, even to the point of simply issuing a threat of involvement without actually getting involved. Such threats also have an impact on the process, but they are harder to document. Judging is based on whether the decision was normatively correct or incorrect, weighing the public good generated by the decision. Thus, in each case, it may be said that the government “should” or “should not” have gotten involved.

Table 1

	Government Should Have Gotten Involved: Affirmative Benefit Achieved or Forgone	Government Should Not Have Gotten Involved: Negative Impact Realized or Avoided
Government Did Get Involved	<i>Affirmative Benefit Achieved:</i> <ul style="list-style-type: none"> <li>• Public Safety Spectrum Interoperability Standard</li> <li>• Digital Television (“DTV”) Transmission Standard</li> </ul>	<i>Negative Impact Realized:</i> <ul style="list-style-type: none"> <li>• Cable Set-Top Boxes Digital Television Transmission Standard</li> </ul>
Government Did Not Get Involved	<i>Affirmative Benefit Forgone:</i> <ul style="list-style-type: none"> <li>• Wireless Telephony Standards</li> </ul>	<i>Negative Impact Avoided:</i> <ul style="list-style-type: none"> <li>• Cable Modem Standards</li> </ul>

#### A. An Affirmative Benefit to a Government Role

There are two types of cases in which a significant, affirmative benefit to government involvement can be foreseen. The first is one in which the user market is relatively small in the sense that user demand is not great, and there is a risk that the normal industry and trade association processes will “overlook” or not timely address the market. The word “overlooked” is not used pejoratively. A market is “overlooked” not only when it is not developed because the prospects of profit are not judged great enough to attract interest, but is also “overlooked” when it is relatively less profitable compared to other markets. Therefore, in such circumstances, it may take so long for commercial enterprises to explore prospects for a market that the market and users’ needs are effectively not addressed.

The second type of case is one in which the user market is very large, but there is a risk that a protracted competition among proposed standards will significantly postpone important benefits to consumers. The legitimacy of this case is enhanced when the benefits are judged to be important not only on their own merits but also when there are larger positive externalities that may be captured by acceleration of the adoption of the standard. The legitimacy of this case is fur-

ther enhanced when a shift to a new standard—the adoption of which is judged to advance a public good—is intended to replace or overtake a standard that is embraced by a large embedded base.

Three examples readily illustrate these two cases:

- the need for standards to ensure interoperability on spectrum used by public safety agencies such as police, fire and emergency medical services;
- the need for a declared, unified standard for DTV transmission; and
- the discontinuities caused by the incompatible standards that have emerged in the area of wireless telephony (although as developed below, the proper government role is not a typical affirmative action to set the standard but rather taking steps to preserve opportunities for competitive standards to develop).

##### 1. *The Case of Interoperable Public Safety Spectrum*

In 1993, Congress responded to long-standing complaints from the public safety community that it was dangerously constrained by a spectrum shortage, evidenced by acute spectrum conges-

tion.<sup>32</sup> In their response, Congress directed the FCC to designate additional spectrum for the exclusive use of public safety users.<sup>33</sup> Congress specifically directed the FCC to designate for such use 24 MHz of the spectrum that will become available in the ultrahigh frequency band (channels 60 to 69) when the transition to digital television is complete.<sup>34</sup>

In implementing this mandate, the FCC sought to resolve another long-standing problem in the public safety wireless communications area: the lack of interoperability among jurisdictions and emergency services.<sup>35</sup> Thus, in critical emergencies such as the Oklahoma City bombing or the Columbine High School shootings, emergency responders from different agencies and jurisdictions have been unable to communicate directly with one another from one handset deployed in the field to another. In a makeshift workaround solution to this problem, agencies sometimes adopt a hub-and-spoke configuration in a common command center in which one representative of each responder stands in the hub and directs instructions and information needed to coordinate operations from operatives deployed at the end of the spokes, back to the hub, and then back to the spokes.<sup>36</sup> This anomaly is an outgrowth of the way that spectrum historically has been allocated to the agencies. Some spectrum is especially well suited to some types of public safety organizations. For example, relatively low frequency spectrum has been favored by some state police agencies, which have a need for very wide geographic propagation of communications

signals.<sup>37</sup> Once a public safety user becomes ensconced in a particular band and becomes committed to purchasing equipment designed to operate in such frequencies, it tends to stay put. The result has been a lack of interoperability in critical situations.

The public safety community has been pursuing this problem for several years within the structure of several organizations that have both public safety officials and equipment industry officials as members, such as TIA.<sup>38</sup> TIA is an ANSI-accredited standard-setting organization.<sup>39</sup>

Essentially two competing standards have emerged that could be adopted to address the interoperability problem: P25 ANSI from North America and Trans European Terrestrial Trunked Radio ("TETRA") European Technical Standards Institute ("ETSI"), which was developed in Europe. P25 originated in "APCO Project 25" working groups and is referred to as APCO Project 25, reflecting APCO's project numbering system, and today is simply known as Project 25 or P25. P25 is documented in ANSI as TIA-102, shorthand for the entire suite of ANSI 102 standards. The technical review and approval process has been assumed by TIA, ANSI's accredited standards development organization. Phase I of the P25 ANSI standard provides a common baseline for interoperability for both current and future P25 implementations. The TETRA standard was developed and approved by ETSI. TETRA has gained currency in Europe, where it has been implemented as the standard of choice among public safety users.

<sup>32</sup> See Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 6002, 107 Stat. 312 (1993) (as codified in 47 U.S.C. § 309)(j)(10)(B)(iv)). See also *Talking with Champions—James J. Flyzik, Treasury*, ACCESS AMERICA (visited Nov. 8, 1999) <[www.accessamerica.gov/docs/publicsafety\\_champions.html](http://www.accessamerica.gov/docs/publicsafety_champions.html)>.

<sup>33</sup> See *In re* Development of Operational Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements through the Year 2010; Establishment of Rules and Requirements for Priority Access Service, *First Report and Order and Third Notice of Proposed Rulemaking*, 14 FCC Rcd. 152, 163-64, para. 15 (1998) [hereinafter *Requirements for Priority Access Service Order*].

<sup>34</sup> See *id.* at para. 2. See also *FCC Adopts Rules for Licensing Largest Block of Public Safety Radio Spectrum Ever Allocated* (Rpt. No. WT 98-24), FCC News Release, Aug. 6, 1998.

<sup>35</sup> See Wireless Telecommunications Bureau, *Public Safety National Coordination Committee Executive Summary* (visited Nov. 8, 1999) <[www.fcc.gov/wtb/publicsafety/ncc/ncc\\_es.html](http://www.fcc.gov/wtb/publicsafety/ncc/ncc_es.html)>.

<sup>36</sup> See *More Frequencies Below 800 MHz Needed for Public Safety Use*, COMM. TODAY, Aug. 13, 1998 (discussing the need for additional towers when using frequencies above 800 MHz for public safety communications).

<sup>37</sup> See Robert Fenichel, *APCO Project 25—Here, Now, and Into the Future* (visited Mar. 30, 2000) <[www.apcointl.org/bulletin/bull/99/march/feature4.html](http://www.apcointl.org/bulletin/bull/99/march/feature4.html)>.

<sup>38</sup> Another such organization is the Association of Public Safety Communications Officials ("APCO") Project 25 coalition formed by the joint efforts of the National Association of State Telecommunication Directors ("NASTD"), the Association of Public Safety Communications Officials International and representatives of the U.S. government. APCO Project 25 includes participation from U.S. local, state and federal public safety users, as well as users from Canada. See TIA Press Release, *TIA Publishes Systems Bulletins and Interior Standard on APCO Project 25* (June 25, 1997) <[www.tiaonline.org/pubs/press\\_releases/1997/97-51.cfm](http://www.tiaonline.org/pubs/press_releases/1997/97-51.cfm)>.

<sup>39</sup> See *TIA Facts at a Glance* (visited Sept. 2, 2000) <[www.tiaonline.org/about/overview.cfm](http://www.tiaonline.org/about/overview.cfm)>.

From a policy perspective, as opposed to an engineering perspective that might focus more intently on signal propagation characteristics and tradeoffs in meeting user needs, there are pros and cons to each of these proposals. First, there is the timing issue. Project 25 is ready for implementation since it successfully has made its way through the TIA vetting process and ANSI accreditation.<sup>40</sup> But Project 25 Phase I calls for channel “widths” of 12.5 kHz, which the FCC, driven by spectrum efficiency concerns, views as less than ideal.<sup>41</sup> The FCC has been pressing for a solution that involves channels of 6.25 kHz.<sup>42</sup> TETRA requires 25 kHz channels and uses Time Division Multiple Access (“TDMA”) technology with four voice slots. It has been approved by ETSI, but is not ready for implementation in the U.S. because it has not been through the TIA process, the U.S. gatekeeper for implementation and adoption.<sup>43</sup> Although there is cooperation between the two standard-setting organizations, there is no “full faith and credit” arrangement that obligates or allows one organization to treat standards approved by the other as approved in its jurisdiction. Another proposal, advanced by Ericsson, requires 12.5 kHz channels and uses TDMA technology with two voice slots. It also has not been through either ETSI or the TIA standards process. Like the TETRA proposal, it has been introduced into the TIA standards process.<sup>44</sup>

There are also competitive aspects to the debate accompanied by significant tension on the part of vying interests. The TIA-102 standard was embraced early on by Motorola, the manufacturer

with the largest market share among public safety system users.<sup>45</sup> Motorola has participated in both standards venues and currently offers compliant equipment to each standard in the respective ANSI and ETSI areas of the world. Other contenders in the field, Ericsson and Nokia, were adherents of TDMA technology; Nokia supporting TETRA, and Ericsson<sup>46</sup> supporting its own TDMA solution. Over time, the process affected a rapprochement between the two standards in the sense of making progress on compatibility issues. Nokia, Ericsson and Motorola have all set forth proposals or guidelines in the P25 process for the North American Phase II TDMA solutions.<sup>47</sup>

The decision concerning what standard shall be adopted for operations in the spectrum designated for interoperability rests with the FCC.<sup>48</sup> This is because the FCC is responsible for “type acceptance” of radios that will operate at the designated frequency. Since no radios previously have operated at this frequency—it is currently being used for television broadcast—this is a new exercise.<sup>49</sup> The responsibility for type acceptance derives from Congress’ mandate to the FCC that it adopt regulations governing potential radio frequency interference.<sup>50</sup> In some cases, the FCC has also included interoperability standards as part of its type-acceptance requirements. Even so, the FCC could essentially delegate the duty of choosing the standard to others, and this it did in a September 1998 order.<sup>51</sup>

In the *Requirements for Priority Access Service Order*, the FCC declined to adopt a standard.<sup>52</sup> Instead, it directed the formation of a federal advisory

<sup>40</sup> See *FCC Releases Service Rules for Public Safety 24 MHz Allocation, Some Agencies Able to Begin Using Frequencies Prior to 2006*, 53 LAND MOBILE RADIO NEWS, No. 40, Oct. 2, 1998 (describing the FCC’s allocation of bands into 6.25 MHz).

<sup>41</sup> See *In re The Development, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communication Requirements Through the Year 2010*, Fourth Notice of Proposed Rulemaking, WT Dkt. No. 96-86, FCC 00-271, paras. 14–18 (rel. Aug. 2, 2000).

<sup>42</sup> See *id.*

<sup>43</sup> See *TETRA Overview* (visited Mar. 30, 2000) <[www.etsi.org/technicalactiv/tetra.htm](http://www.etsi.org/technicalactiv/tetra.htm)>; APCO International Press Release, *APCO International Project 25 Committee Approves Ericsson, TETRA Proposals* (Nov. 19, 1999) <[www.apcointl.org/project25/p25.html](http://www.apcointl.org/project25/p25.html)>.

<sup>44</sup> See Robert Fenichel, *APCO Project 25—Here, Now, and Into the Future* (visited Mar. 30, 2000) <[www.apcointl.org/bulletin/bull/999/march/feature4.html](http://www.apcointl.org/bulletin/bull/999/march/feature4.html)>.

<sup>45</sup> Motorola Press Release, *Motorola Introduces First Project 25 Compliant Conventional System* (Aug. 13, 1996) <[www.motorola.com/General/Press/PR960826\\_4262.html](http://www.motorola.com/General/Press/PR960826_4262.html)>.

<sup>46</sup> Ericsson’s private radio systems operations were recently acquired by Com-Net Critical Communications. See Ericsson Press Release, *Ericsson’s Private Radio Systems business acquired by Com-Net Critical Communications* (Jan. 7, 2000) <[www.ericsson.dk/pressroom/Press\\_Releases/PRindex\\_S\\_Corporate.html](http://www.ericsson.dk/pressroom/Press_Releases/PRindex_S_Corporate.html)>.

<sup>47</sup> See Ericsson Press Release, *Ericsson Offers Proposal to Harmonize Third-Generation Mobile Communications* (Dec. 8, 1998) <[www.gsmdata.com/arteric.htm](http://www.gsmdata.com/arteric.htm)>; APCO International Press Release, *Project 25 Committee Approves Ericsson, TETRA Proposals* (Nov. 19, 1999) <[www.apcointl.org/project25/p25\\_steering.rtf](http://www.apcointl.org/project25/p25_steering.rtf)>; Motorola Press Release, *Motorola Proposes Unifying Guidelines for North American Two-Way Radio Communications Standard* (Oct. 25, 1999).

<sup>48</sup> See 47 U.S.C. § 302(a) (2000).

<sup>49</sup> See *Requirements for Priority Access Service Order*, 14 FCC Rcd. at 154, para. 1.

<sup>50</sup> See 47 U.S.C. § 302(a); 47 C.F.R. § 2.901 (2000).

<sup>51</sup> See *Requirements for Priority Access Service Order*, 14 FCC Rcd. at 154, para. 1.

<sup>52</sup> See *id.* at 156–57, para. 7.



committee named the Public Safety National Coordination Committee ("NCC").<sup>53</sup> The charge of the NCC was to fashion recommendations to the FCC concerning a standard for the interoperability spectrum, among other assignments.<sup>54</sup> Originally, the FCC contemplated that the NCC would undertake an independent standard-setting exercise,<sup>55</sup> but upon reconsideration, the FCC authorized the NCC to rely upon previous work of ANSI-accredited standard-setting organizations, such as TIA.<sup>56</sup> Without authority to do so, the NCC likely would have had to become ANSI-accredited itself, which would have required more time in a process that already had become arguably overdue in light of the statute's 1998 deadline for licensing the spectrum to public safety entities.<sup>57</sup>

The NCC is in the process of preparing recommendations for the FCC, an exercise that began in February 1999.<sup>58</sup> Initial recommendations were forwarded to the FCC in February 2000, with the life of the NCC anticipated to last up to four years beyond the date of its 1999 inception.<sup>59</sup> The report recommended that the FCC embrace TIA-102 ANSI as the standard for the new spectrum, a decision that will put in motion production plans for handsets and infrastructure that operate at the designated frequency based on the TIA-102 suite of standards.<sup>60</sup>

There are numerous characteristics of the public safety market and the standard-setting process that made the government's involvement in the standard-setting process for the interoperability spectrum more sensible than the alternatives. First, the market for public safety equipment—infrastructure, base stations and mobile units—is much smaller than the market for commercial mobile infrastructure and devices. It is also fractionalized. Purchasing decisions are made at the state, county or local level, and are often made by different agencies and processes at the various jurisdictional levels. There are numerous formal

and informal professional networks to share and coordinate information about dealing with vendors. But purchasing decisions and purchasing power are rarely coordinated. Perhaps the next best thing is a role for the government in aggregating the selection power for standards, while maintaining sensitivity to the unique and varied needs of public safety users. These effects, however, must be balanced with the competitive vitality of the public safety market.

Second, the government role was not a matter of starting from scratch. Particularly after the FCC's reconsideration order, the government's role, played out in part through the NCC, built significantly upon what had gone before in professional and commercial standard-setting groups.

Third, the public good stakes are high. The perpetuation of communications problems caused by the lack of interoperability is not quantifiable in impact; it is difficult to say what toll such problems have already had in draining or diverting emergency response resources. But allowing such problems to continue is an uncomfortable path; their perpetuation seems virtually certain to lead eventually to direct adverse consequences that will be laid at the doorstep of the interoperability problem.

## 2. *The Case of Digital Television*

One of the most contentious public policy issues in telecommunications during the 1990s was the transition to digital television ("DTV"). The issues subject to debate were legion. One issue was the basis on which the spectrum should be made available to broadcasters—whether it should be auctioned, as most other spectrum for commercial use was being handled at the time pursuant to congressional mandate.<sup>61</sup> In the end, Congress decided to allocate temporarily 6MHz of spectrum to each broadcast licensee without auctions.<sup>62</sup> Another issue was whether the broadcast-

<sup>53</sup> See *id.*

<sup>54</sup> See *id.*

<sup>55</sup> See *id.*

<sup>56</sup> See Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, *Memorandum Opinion and Order on Reconsideration*, 14 FCC Rcd. 8059, 8065, para. 11 (1999).

<sup>57</sup> See *id.* at 8064–65, para. 10.

<sup>58</sup> See *id.*

<sup>59</sup> See *id.*

<sup>60</sup> See *Public Safety National Coordination Committee Recommendations to the Federal Communications Commission for Technical and Operational Standards for Uses of the 764-776 MHz and 794-806 MHz Public Safety Band Pending Development of Final Rules* (Feb. 25, 2000) <[www.fcc.gov/wtb/publicsafety/ncc/feb25body.pdf](http://www.fcc.gov/wtb/publicsafety/ncc/feb25body.pdf)>.

<sup>61</sup> See Mass Media Bureau, Policy and Rules Division, Federal Communications Commission, *Digital Television Tower Siting Fact Sheet and Frequently Asked Questions* (visited Feb. 12, 2000) <[www.fcc.gov/mmb/prd/dtv](http://www.fcc.gov/mmb/prd/dtv)>.

<sup>62</sup> See *id.*

ers should be required to use the spectrum to provide high definition television (“HDTV”)—essentially sharper, richer television images—or whether broadcasters should be permitted flexibility to use the spectrum for a variety of advanced services.<sup>63</sup> Eventually, it was decided to afford broadcasters flexibility.<sup>64</sup> Another issue was the timing of the surrender of the spectrum now used for traditional analog broadcasting so that that spectrum could be auctioned.<sup>65</sup> Congress decided to schedule completion of the transition to digital for 2006, with escape clauses in the event that there is evidence that viewers have not made a transition by buying DTV receiver equipment (new televisions or new set-top boxes).<sup>66</sup>

All of these policy and allocative fairness issues built upon the successful execution of a process to reach agreement on the even more fundamental issue of what transmission standard to use for DTV. A single standard was desirable because of the characteristics of the mass consumer market for electronics—asking consumers to consider upgrading a television that is working fine (or to buy a set-top box for a television that works fine without one) is one thing. But asking them to make a choice among competing standards advanced by competing brands was deemed a step more than regulators and the industry should expect consumers to take. The FCC’s order adopting the DTV standard reflects robust debate among commenters about whether FCC action was necessary and whether the market could operate without such intervention to establish a standard.<sup>67</sup> The FCC’s order recites concerns about the delays that startup, coordination and splintering could cause for DTV adoption.<sup>68</sup> But it concluded “we are not convinced that these problems are so severe that they would absolutely preclude us from allowing the market to operate without a set standard.”<sup>69</sup>

<sup>63</sup> See *id.*

<sup>64</sup> See *id.*

<sup>65</sup> See *id.*

<sup>66</sup> The Balanced Budget Act of 1997 allows broadcasters to continue to use the spectrum for which they are now licensed beyond 2006 if, for example, less than 85% of television households in a market have the equipment to receive DTV signals. See Pub. L. 105-33, 111 Stat. 251, 258 (1997) (codified as amended at 47 U.S.C. § 309(j) (2000)).

<sup>67</sup> See *In re Advanced Television Systems and Their Impact Upon the Existing Television Broad. Service*, *Fourth Report and Order*, 11 FCC Rcd. 17,771, 17,777–79, paras. 10–14. (1996) [hereinafter *DTV Fourth Report and Order*].

<sup>68</sup> See *id.* at 17,776, para. 8 (explaining that “[s]tartup refers to the situation where everyone would be better off

Nevertheless, the FCC continued, “we are concerned that market solutions may result in more than one sustainable transmission standard.”<sup>70</sup> The consequences, the FCC concluded, would be unacceptable:

Such an outcome might result in compatibility problems and increase the risk that consumer DTV equipment purchased in one city would not work well in another city; that a receiver would not display all the broadcast channels in a city; or that a digital television set purchased one year might not work several years later. Such results would hurt consumers and make it more difficult to preserve a universally available broadcast television service.<sup>71</sup>

By the time the rules were finally adopted at year-end 1996, the process had been underway for many years, going back to 1987 in terms of the FCC’s involvement. In 1987, the FCC chartered a federal advisory committee, the Advisory Committee on Advanced Television Service (“ACATS”), to make recommendations concerning the transition to what was then called Advanced Television (“ATV”).<sup>72</sup> Initially, additional spectrum allocations were not contemplated in deploying ATV.<sup>73</sup> Rather, the FCC envisioned upgrades on existing broadcast frequencies.<sup>74</sup> But the FCC decided a few years later that temporarily allocating an additional 6MHz of spectrum for deployment of ATV would better advance a less disruptive transition.<sup>75</sup>

By February 1993, ACATS reported to the FCC that it could not recommend any of the four competing digital television systems then under discussion over the others because all required more work and development.<sup>76</sup> Later that year, the seven entities that had been working on the four contending systems (AT&T and Zenith Electronics Corporation; General Instruments Corporation and the Massachusetts Institute of Technology; and a consortium composed of Thomson Consumer Electronics, Philips Consumer Elec-

adopting DTV technology, but no one has the incentive to move first. Coordination is the collaborative effort by broadcasters, consumer equipment manufacturers, and program producers that is necessary to introduce DTV. Splintering refers to the breakdown of consensus or agreement to use the DTV Standard.”) (footnotes omitted).

<sup>69</sup> *Id.* at 17,778, para. 34.

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

<sup>72</sup> See *id.* at 17,773, para. 4.

<sup>73</sup> See *id.*

<sup>74</sup> See *id.*

<sup>75</sup> See *id.*

<sup>76</sup> See *id.*

tronics and the David Sarnoff Research Center) formed "The Grand Alliance" to develop a final, unified standard.<sup>77</sup> It voted its final recommendation in November 1995.<sup>78</sup>

The path of implementing the standard has been wrought with controversy since its adoption. Issues concerning surrender of the existing broadcast spectrum continue to roil. The rollout schedule for tower extensions necessary to deploy DTV has been fraught with delay. And the merits of the standard selected have been subject to challenge. In October 1999, Sinclair Broadcast Group, Inc. filed a Petition for Expedited Rulemaking seeking a reopening of the DTV standard.<sup>79</sup> It urged the FCC to modify its rules to allow broadcasters to employ the Coded Orthogonal Frequency Division Multiplexing ("COFDM") standard that ACATS had rejected in addition to the one it had recommended.<sup>80</sup> Sinclair urged that the standard adopted by the FCC did not reliably allow indoor reception of DTV signals, where most people like to watch television.<sup>81</sup>

In February 2000, the FCC rejected the petition, citing the work of the FCC's Office of Engineering and Technology, which had studied both standards and "concluded that the benefits of changing the DTV transmission standard to COFDM would not outweigh the costs of making such a revision."<sup>82</sup> The FCC also concluded that "the Sinclair petition had done no more than to demonstrate a shortcoming of early DTV receiver implementation," which manufacturers were working hard to overcome.<sup>83</sup>

Even taking account of these bumps in the road, and even though pervasive implementation in a way that benefits "real people" is still a long way off, it is not too early to observe that government involvement probably did more good than harm in the DTV standard-setting process. The FCC's order, however, demurs taking credit for this positive impact, stating "[t]his proceeding demonstrates how competing industries, working together, can develop *de facto* industry-selected standards that satisfy the interests of contending parties."<sup>84</sup>

But the DTV standard is not a classic example of a *de facto* standard. It was developed by a consortium of companies under the auspices of a federal advisory committee. The output of the advisory committee was circulated for public notice and comment and eventually codified in federal regulations. These characteristics present abundant contrasts with the process by which, for example, Microsoft Windows became the *de facto* dominant standard operating system for desktop processors. Government involvement was an indispensable element.

The characteristics that made the DTV transition suitable for a government role in selecting the transmission standard are evident. First, the need for the public and the broadcasters to move together in a sequenced transition made the process a good candidate for government involvement. The transmission standard affected infrastructure and equipment purchase decisions on the broadcasters' side of the equation and consumer purchase decisions on the viewers' side of the equation. One group cannot make decisions until the other does, and the industries on the broadcast side of the equation are easier to organize for input on technical subjects than are viewers.

Second, the decision on standards involved coaxing consumers beyond an investment in a collective embedded base that is quite large. Taking into account the durability of receivers and the number of households that own more than one television receiver, it is asking a lot of consumers to make the switch.

Third, the timing urgency created by another public policy force made the DTV process a good candidate for government participation. That public policy force was the advent of auctions, and the tether between the auction process and the budget process. The proceeds of auctions had to be factored into federal budget projections; thus, certainty about the timing of auctions was desirable. Without agreement about a transmission standard, regulators could make no reliable projection of when the transition to DTV would be

<sup>77</sup> *See id.*

<sup>78</sup> *See id.*

<sup>79</sup> *See* Advanced Television Systems and Their Impact Upon the Existing Television Broad. Service, *Petition for Expedited Rulemaking*, filed on behalf of Sinclair Broad. (Oct. 8, 1999).

<sup>80</sup> *See id.* at i.

<sup>81</sup> *See id.* at ii.

<sup>82</sup> *FCC Denies Sinclair Petition for Rulemaking on COFDM Standard*, FCC News Release, (Feb. 4, 2000).

<sup>83</sup> *Id.*

<sup>84</sup> *DTV Fourth Report and Order*, 11 FCC Rcd. at 17,772, para. 2.

complete and when, therefore, the spectrum currently occupied by broadcasters would be available for auction.

### 3. *The Case of Wireless Telephony Standards*

Occasionally, the need for a government role in standard-setting is measured by the gap left when government declines to play a role. The current generation of digital mobile wireless service in the U.S. ("2G") operates under three standards:

- TDMA (Time Division Multiple Access), which divides a channel into timeslots and sorts user transmissions into these timeslots;
- CDMA (Code Division Multiple Access), a spread spectrum technology; and
- GSM (Global System for Mobile Communications), a European standard for digital cellular system that has gained some currency in the U.S.<sup>85</sup>

In January 1998, the European Telecommunications Standards Institute ("ETSI") agreed upon a Third Generation ("3G") mobile wireless standard that relies on a combination of TDMA- and CDMA-based standards.<sup>86</sup> The standard is called UTRA, an acronym for UMTS (Universal Mobile Telecommunications System) Terrestrial Radio Access.<sup>87</sup> Wideband-CDMA ("W-CDMA") will be used for wide-area applications and Time Division-CDMA ("TD-CDMA") will be used for indoor applications involving low mobility.<sup>88</sup> This standard was forwarded to the ITU for consideration.<sup>89</sup>

The United States, by contrast, took the stance that the market can support multiple standards and that over time the market will pick a predominant standard. Accordingly, the United States forwarded to the ITU four proposals for co-existing 3G standards.<sup>90</sup>

There is a substantial and important role that the ITU appropriately can play in evaluating these standards. The choice was essentially between a unified standard chosen by ETSI and a menu of standards advocated by the United States. The

failure of the system, up until this point, to organize submission and negotiation over national or regional standards is inefficient. The ITU's involvement in evaluating and recommending 3G wireless standards can help mitigate or avoid this type of diseconomy and inefficiency. The results of the recent World Radio Conference, under the auspices of the ITU, represents good progress toward a recommendation along the lines of flexibility and a technology-neutral multiband approach.<sup>91</sup>

This case makes the point that government entities can have different roles at different jurisdictional levels. The U.S. government's involvement in the process was essentially to take no positive role in forcing a unification of the competing standards proffered domestically in the U.S. and to urge the relevant international governmental organization, the ITU, to permit multiple standards to develop rather than allow essentially mandatory regional standards to prevail. Thus, on the one hand, a national government elected not to become involved domestically, while urging a governmental entity at a supranational jurisdictional level to become involved—but only for the purpose of preserving competing standards.

The characteristics of this situation make it ripe for government involvement of a limited and atypical nature at the international level. First, the nature of government involvement here is not in line with the other examples. The aim of the U.S. government's involvement appears to be an attempt to keep the decisional environment open to competing standards. The correctness of this judgment is supported by the relatively benign experience of mobile telephone users in the United States. Although the absence of a single standard has put some limits on the availability of roaming, the fact that several carriers have built and developed networks with nationwide footprints has mitigated this problem. Also, the development of roaming agreements to cover areas with compatible networks outside the home carrier's network has helped. Thus, the absence of a unified U.S.

<sup>85</sup> See GSM World, North American 1999 GSM Highlights (visited June 26, 2000) <[www.gsmworld.com/news/latest\\_news7.html](http://www.gsmworld.com/news/latest_news7.html)>.

<sup>86</sup> See UMTS Report No. 5, *Minimum Spectrum Demand per Public Terrestrial UMTS Operator in Initial Phase* <[www.umts-forum.org/reports.html](http://www.umts-forum.org/reports.html)>.

<sup>87</sup> See *id.*

<sup>88</sup> See *id.*

<sup>89</sup> See generally UMTS Reports (visited July 2, 2000) <[www.umts-forum.org/reports.html](http://www.umts-forum.org/reports.html)>.

<sup>90</sup> See *UMTS Backs 3G Harmony*, ELECTRONIC TIMES, JUNE 14, 1999.

<sup>91</sup> See *WRC-2000 Wraps Up Work with Spectrum Deals, Despite Last-Minute Wrangling over BSS Replanning*, TELECOMM. REPS. (June 5, 2000) <[www.tr.com/tronlone/tr/2000/tr060500/tr060500-04.htm](http://www.tr.com/tronlone/tr/2000/tr060500/tr060500-04.htm)>.

standard for first and second generation wireless services has been generally no worse than an inconvenience that has not noticeably retarded development of service or subscriber growth.

Second, the market to be served is enormous, in contrast with, for example, the public safety wireless community. This affords room for experimentation. The downside of "failed" experiments has relatively less dire consequences for the mostly social and commercial users of nonpublic safety wireless services. Should a competing standard not survive in the marketplace, the costs of migrating users to a system that employs a surviving standard are diffuse and not borne directly on the public budget, in contrast to the example of public safety users.

Third, the benefits of variety and innovation that generally accompany competition can be achieved in a way that is compatible with improving the availability of roaming. With competing standards being deployed in the world marketplace, the incentive to coordinate can work among network builders to promote roaming. If a single standard prevails in one part of the world, by contrast, coordination becomes a take it or leave it proposition—other providers must build to that standard or abandon the prospect of roaming. The ubiquitous deployment of networks using competing standards, at least until the market identifies which, if any, is superior for various purposes, thus produces enhanced incentives for coordination.

#### B. Cases Where Government Involvement is of Minimal or Questionable Benefit

Likewise, there are cases in which government involvement in telecommunications standard-setting provide little benefit. Set-top boxes and cable modem standards are two examples.

##### 1. *The Case of Cable Set-Top Boxes*

The transition to DTV has created several issues with respect to the relationship of the cable industry to the broadcast industry. Many of these issues

go back to a fundamental policy decision that Congress made in 1984 giving local broadcasters two powerful options in dealing with the local cable operator's carriage of the broadcast signal.<sup>92</sup>

First, broadcasters had the option of invoking a statutory requirement that the cable operator "must carry" the broadcast signal on the valuable basic tier of service that all cable subscribers receive.<sup>93</sup> The statutory provision rested on the legislative policy judgment that cable would be so preferred by viewers to over-the-air broadcast that the vitality of local broadcast might be threatened if local broadcast channels were not widely available via the cable platform.<sup>94</sup>

Congress also gave broadcasters a valuable second option. Broadcasters, as an alternative to invoking the must carry obligation of cable operators, may require the operator to enter into negotiations for "retransmission consent."<sup>95</sup> These negotiations are intended to lead to compensation for the broadcaster in consideration for the broadcaster's consent for the cable operator's retransmission of the broadcast signal.

The must carry regime has been upheld by the Supreme Court against cable industry challenges that it imposed an undue burden on cable operators and violated their First Amendment rights.<sup>96</sup> The Court's rationale rested largely on its acceptance that it was legitimate for Congress to adopt and enforce the must carry regime because of the possible threat that would be posed to the vitality and viability of local broadcast.<sup>97</sup> While acquiescing in the Supreme Court's decision upholding analog must carry, cable operators have opposed the way in which some broadcasters have construed the law—that operators would have the obligation to carry both the analog and the digital signal for the duration of the transition and that cable operators would have an obligation to transmit multiple signals if broadcasters chose to use their spectrum in such a way.<sup>98</sup>

The question would not be so weighty but for the messy edges of the transition. The transition to DTV will not be complete until the broadcasters have ceased broadcasting on the frequencies now used for broadcasting analog signals.<sup>99</sup> They

<sup>92</sup> See 47 U.S.C. § 325(b)(1) (1994).

<sup>93</sup> See *id.* at § 325(b)(1).

<sup>94</sup> See Cable Television Consumer Protection & Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (1992) (codified in scattered sections of 47 U.S.C. §§ 521-611 (1994)).

<sup>95</sup> See 47 U.S.C. § 325(b)(1).

<sup>96</sup> See *Turner Broad. Sys. v. FCC*, 520 U.S. 180 (1997).

<sup>97</sup> See *id.* at 187-92.

<sup>98</sup> See generally Harris J. Aaron, Note, *I Want My MTV: The Debate Over Digital Must-Carry*, 80 B.U. L. REV. 885 (2000).

<sup>99</sup> See generally Larry Bloomfield, *Cable-Broad. Compatibil-*

may have a respite from relinquishing that spectrum in some markets until a significant percentage of households have purchased television receivers capable of receiving digital broadcast signals. Until the cost of the receivers comes down significantly, such penetration is unlikely to occur. In various contexts, the FCC has stated its expectation that the spectrum will be relinquished by 2006, but the statutory trigger is more complex and dependent to some measure upon penetration of receivers.<sup>100</sup>

In the meantime, cable customers that take the plunge and purchase digital receivers will find that they cannot receive digital signals via the cable platform unless they have purchased a set-top box that is capable of receiving the signal or have purchased a digital cable ready receiver.<sup>101</sup> Neither of these is generally available on the commercial market yet.<sup>102</sup>

The FCC is already deeply involved in commercial decisions about cable set-top boxes because of Section 629 of the Telecommunications Act of 1996.<sup>103</sup> Section 629 directs the FCC to promulgate rules that would foster the development of a competitive commercial market in set-top navigation devices so that cable subscribers could obtain such appliances from multiple sources.<sup>104</sup> At the same time, Congress directed the FCC to protect multichannel video providers' content security.<sup>105</sup> In other words, to the extent that the set-top box plays a role in preventing unauthorized reception of signals, the FCC was directed by statute to make sure that this function was not sacrificed.<sup>106</sup> The FCC's order permitted the integration of the se-

curity and navigation functions for a limited time until 2005, after which time it would be unlawful to integrate both functions in the box.<sup>107</sup> The prohibition is designed to foster competition among manufacturers in the navigational device market.

Two fundamental issues that remain unresolved involve the requirements for DTV receivers to become cable compatible and licensing arrangements for protection against unauthorized copying of cable content. The National Association of Broadcasters has urged the FCC to step into the breach, beyond the "jawboning" in which it already has engaged. The Commission has commenced a broad proceeding threatening to implement rules if agreement cannot be reached<sup>108</sup>

Raising the stakes in this way can be equivalent to actual involvement if the threat of imminence and inevitability is credible. But it is unnecessary to achieve the desired result and at odds with other undertakings of the FCC that affect the transition to DTV.

First, the debate about receiver and set-top box compatibility is closely tied to the debate over digital must carry. At the end of the transition, it is likely that cable operators will end up carrying the broadcasters' primary signals either because they are forced to do so by the FCC or because they deem it to be in their own commercial interest. In either event, this eventuality will require the cable industry to be ready at the end of the transition with operating boxes in the home. The set-top box problem is likely to heal itself as a side benefit of the conclusion of the DTV transition. Additional intervention is not useful or needed.

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ity—an Oxymoron?, BROAD. ENGINEERING, Apr. 30, 2000 [hereinafter Bloomfield].

<sup>100</sup> See generally *id.*; see also Mark Wigfield, *Cable, Electronics Industries Okay Digital-TV Pact*, DOW JONES INT'L NEWS, Feb. 23, 2000, at 19:30:00 ("All viewers are to have access to digital television by 2002, and broadcast stations must return their analog spectrum license to the FCC by 2006.").

<sup>101</sup> See generally Glen Dickson, *Back to the Future*, BROAD. & CABLE, Aug. 2, 1999.

<sup>102</sup> See generally Bloomfield, *supra* note 99.

<sup>103</sup> See, e.g., *id.*

<sup>104</sup> See 47 U.S.C. § 549(a) (1994) ("The Commission shall, in consultation with appropriate industry standard-setting organizations, adopt regulations to assure the commercial availability, to consumers of multichannel video programming systems, of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services.").

<sup>105</sup> See 47 U.S.C. § 549(b) ("The Commission shall not prescribe regulations under subsection (a) which would jeop-

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ardize security of multichannel video programming and other services offered over multichannel video systems, or impede the legal rights of a provider of such services to prevent theft of service.").

<sup>106</sup> See *In re* Amendment of Parts 2, 15, 18 and Other Parts of the Commission's Rules to Simplify and Streamline the Equipment Authorization Process for Radio Frequency Equipment, *Report and Order*, 13 FCC Rcd. 11,415, 11,4416, para. 2 (1998) [hereinafter *Streamlining Order*]; but see *Commission Advances "Navigation Devices" Rules Creating Consumer Market for Set Top Boxes: Allows Analog Deferral*, FCC News Release, May 13, 1999 (visited June 26, 2000) <[www.fcc.gov/Bureaus/Cable/News\\_Releases/1999/nrcb9009.html](http://www.fcc.gov/Bureaus/Cable/News_Releases/1999/nrcb9009.html)> (noting that the Commission is considering whether to accelerate the compliance date to 2003).

<sup>107</sup> See *In re* Implementation of Section 304 of the Telecommunications Act of 1996, *Report and Order*, 13 FCC Rcd. 14,775, 14,776, para. 3 (1998).

<sup>108</sup> See *In re* Compatibility Between Cable Systems and Consumer Electronics Equipment, *Notice of Proposed Rulemaking*, PP Dkt No. 00-67 (rel. Apr. 14, 2000).

Second, one of the greatest risks of sidetracking this benefit rests within the control of the FCC itself. The broadcasters' proposals to enlarge the must carry requirement so that cable operators would be required to carry multiple signals during the transition or thereafter is a deterrent to reaching the point where carriage of the primary signal is acceptable. So far, the agency has not rushed to embrace multiple signal plans, and its continued resistance supports the right outcome in the set-top box proceeding as well.

## 2. *The Case of Cable Modem Standards*

In 1999, a pitched battle came to a head between cable operators and certain Internet Service Providers over the issue of whether the network that enables provisioning of high-speed cable modem data service should be open to others, not just cable operators on a wholesale basis to provide customer service.<sup>109</sup> The leading proponent of this viewpoint was AOL, arguing that the proprietary cable platform would become a bottleneck.<sup>110</sup> It was critical, they argued, that regulators establish rules to prevent cable operators from affording exclusive access to the platform to favored affiliates, such as Excite@Home and Roadrunner.<sup>111</sup> Allies of this position included the Regional Bell Operating Companies ("RBOCs"), which argued that the anti-bottleneck rules that applied to the local loop in telephony justly should be applied to the cable plant to achieve parity in the regulatory scheme—or else the regulatory burden should be lifted from the RBOCs' provisioning of high-speed data services in order to achieve parity.<sup>112</sup>

Proponents of the cable position argued that cable modem service was nascent and had no market share that posed a plausible near-term

threat of becoming a bottleneck.<sup>113</sup> Opponents responded that it was important to fix the rules *before* a bottleneck was ensconced, which likely would happen given the attractiveness of cable modem service and the strong marketing position cable operators occupied with respect to their existing base of video subscribers.<sup>114</sup>

Proponents of the cable position argued that rules regarding cable networks being opened to competitors were best left to commercial negotiation.<sup>115</sup> In other words, cable operators advocated that, rather than having the government declare that the networks must be open and set, the potential contracting parties should be permitted to find commercially sensible terms for contracts between operators and competitive providers without the overhang of government intervention.<sup>116</sup>

At one level, the debate became focused on what the obstacles to opening the cable network were. Some argued that the main reason not to open the networks was one of fairness: that the networks were built with private investment and were, as such, private property.<sup>117</sup> The argument ran that the government must have a very substantial justification for demanding that a private property owner share its property, even with compensation, with rivals.<sup>118</sup> Here, there was no such justification some operators and their advocates argued, because there was no evidence of a bottleneck, in contrast with the substantial historical experience of the local loop for telephony.

Others argued that technical obstacles made opening the cable network at least difficult, if not impractical. The argument was that there were few practical points where interconnection of the incumbent and competing networks could be achieved without sacrificing quality of service or customer care, a problem that scaled in proportion to the number of competitive providers the

<sup>109</sup> See generally, Earl W. Comstock & John W. Butler, *Access Denied: The FCC's Failure to Implement Open Access to Cable as Required by the Communications Act*, 8 COMM.LAW CONSP. 5 (2000).

<sup>110</sup> See *id.*

<sup>111</sup> See *id.*

<sup>112</sup> See *id.*

<sup>113</sup> See *id.*

<sup>114</sup> See *id.*

<sup>115</sup> See, e.g., America Online, *Memorandum of Understanding Between Time Warner, Inc. and America Online* (visited May 24, 2000) <media.web.aol.com/media/press\_view.cfm?> ("AOL Time Warner will effectuate such choice for consumers by negotiating arm's-length commercial agreements with both affiliated (such as AOL) and unaffiliated ISPs that wish

to offer service on the AOL Time Warner broadband cable systems. Pursuant to such commercial agreements, AOL Time Warner will partner with ISPs to offer consumers a choice of competing broadband internet service offerings.").

<sup>116</sup> See *In re Applications for Consent to Transfer of Control of Licenses from MediaOne Group, Inc. to AT&T Corp., Application for Transfer of Control and Public Interest Showing*, CS Dkt. No. 99-251 (July 12, 1999).

<sup>117</sup> See generally *In re Applications for Consent to Transfer of Control of Licenses from MediaOne Group, Inc. to AT&T Corp., Reply Comments of AT&T Corp. and MediaOne, Inc.*, CS Dkt. No. 99-251, at 6 (Sept. 17, 1999) (noting, among other things, that AT&T has invested over \$100 billion in its market-entry strategy).

<sup>118</sup> See *id.*

incumbent had to accommodate.<sup>119</sup>

In the course of the debate came the assertion that the root of the problem that made opening the cable network difficult lay in the architectures and embedded standards cable operators had chosen to deploy their networks. This portion of the debate came to a head when GTE, CompuServeClassic and AOL announced the results of a trial they had conducted in Florida to refute cable operators' arguments about the difficulty of allowing multiple ISPs to have direct access to customers via the cable platform.<sup>120</sup> GTE's news release said that it had worked with several different vendors using off the shelf equipment, and it had made changes to its own cable modem platform to allow competing ISPs to gain access to customers.<sup>121</sup> It summed the one-time required investment as "less than a dollar a home passed."<sup>122</sup> The trial was criticized by Excite@Home, a principal provider of cable modem-linked services and portals as an incomplete experiment:

Even if traffic can be directed to the proper ISP, the cable infrastructure is a shared network . . . Because of the nature of the shared network, allocation of capacity is problematic . . . It would effectively turn cable's fat pipe into multiple thinner pipes like DSL[,] . . . [which] is grossly sub-optimal in the cable environment.<sup>123</sup>

The vocabulary of the open access debate has had many variations over its life, many different ways in which the petition for regulatory intervention has been voiced. At its common denominator, however, is the notion that the regulators ought to step in to standardize the way in which competing ISPs could access the architecture of the cable modem platform. The arguments have been aimed at federal regulators, policy-makers and legislators, and at local officials who superintend renewal of the franchise agreements that

permit operators to serve subscribers in a given locale.

To date, some local officials have found these arguments appealing,<sup>124</sup> but the FCC has declined to intervene on the ground that the cable modem service industry is nascent and should develop free of added regulatory requirements.<sup>125</sup> It would take intervention at the federal level to impose a comprehensive change in the architectures commonly deployed in the cable plant, and the reluctance to step in is a sensible result for several reasons.

First, the evolution of the debate has turned out to validate the proposition that open access could be a sensible commercial proposition. After its acquisition of Time Warner, for example, AOL stepped back from its vigorous public advocacy of open access, having achieved the core of its objectives by commercial means.<sup>126</sup> Other cable operators also have announced commercial decisions to open their networks.<sup>127</sup>

Second, the thrust of the case for government intervention was essentially an invitation to the government to level the playing field between entities with different means for bridging the last mile (cable modem vs. DSL; AT&T vs. GTE), or between entities with a means for bridging the last mile and those without the means for doing so (cable modem vs. no owned infrastructure; AT&T vs. AOL). A comparison is made to past congressional actions: In the Telecommunications Act of 1996 Congress determined that it was appropriate to require the RBOCs to open their networks to competitors.<sup>128</sup> But that judgment rested on over a decade's observation that the local exchange had become a bottleneck facility and without an

<sup>119</sup> See GTE News Release, *GTE Demonstrates Ease of Cable Open Access to Multiple ISPs; Clearwater Trial Shows One-Time Investment of Less Than \$1 Per Home Would Provide Consumer Choice* (June 14, 1999) <[www.gte.com/AboutGTE/NewsCenter/News/Releases/ClearwaterOpenAccess.html](http://www.gte.com/AboutGTE/NewsCenter/News/Releases/ClearwaterOpenAccess.html)>.

<sup>120</sup> See *id.*

<sup>121</sup> See *id.*

<sup>122</sup> *Id.*

<sup>123</sup> Excite@Home Press Release, *The Technical Shortcomings of the GTE "Open Access" Trial* (visited Mar. 30, 2000) <[www.home.net/source/techdetails.html](http://www.home.net/source/techdetails.html)>.

<sup>124</sup> See OpenNet Coalition Press Release, *Maryland, Kansas Join Open Access Bandwagon* (Feb. 7, 2000) <[www.opennetcoalition.org/news/949962651.shtml](http://www.opennetcoalition.org/news/949962651.shtml)> (noting that open access legislation had been introduced in Md., Va., Kan., Pa., Mich., Ill., Vt., Del. and Idaho).

<sup>125</sup> See FCC Chairman William E. Kennard, Remarks Before the National Cable Television Association (June 15, 1999) <[www.fcc.gov/Speeches/Kennard/spwek921.html](http://www.fcc.gov/Speeches/Kennard/spwek921.html)>.

<sup>126</sup> See Peter S. Goodman & Craig Timberg, *AOL Ends Its Push for Open Access*, WASH. POST, Feb. 12, 2000, at A1, 11; see also Kathy Chen, *AOL Changes Tune in Debate On Cable Access*, WALL ST. J., Feb. 14, 2000, at B1.

<sup>127</sup> See Letter from David N. Baker, et al. to FCC Chairman Kennard (Dec. 6, 1999) <[www.att.com/press/item/0,1354,2331,00](http://www.att.com/press/item/0,1354,2331,00)>; see also AT&T Press Release, *AT&T Commits to Give Consumers Choice of ISPs for High-Speed Internet Access Via Cable, Fixed Wireless* (visited May 15, 2000) <[www.att.com/press/item/0,1354,2320,00](http://www.att.com/press/item/0,1354,2320,00)>; AT&T Press Release, *AT&T Commits to Open Cable Access* (visited May 15, 2000) <[www.clecplanet.com/news/9912/991206att.htm](http://www.clecplanet.com/news/9912/991206att.htm)>.

<sup>128</sup> See, e.g., 18 U.S.C. § 251 (2000); 18 U.S.C. § 271 (2000).



open access obligation, competition was not possible.

## V. CONCLUSION

Many aspects of the telecommunications industry, even as various segments become more competitive and less regulated, still have significant relationships with industry regulators and policy-makers at the federal level. This may be because the companies are themselves still significantly regulated, are spin-offs of regulated enterprises, or because they rely on regulators and policy-makers to police the behavior of their competitors.

Because the industry and federal regulators and policy-makers continue to see each other and work together so closely, there are temptations and urges on both sides to involve government in standard-setting projects of all sorts. Some of these could just as well be left to the market to establish the standard; some actually merit a government role. Weighing the costs and benefits of government taking such a role requires significant exercises in judgment. A checklist approach will not capture the nuances of that judgment. Studying and enumerating the salient characteristics of those processes, however, may avoid wasted time and effort.

Characteristics Suggesting Government Involvement Might be Beneficial	Characteristics Suggesting Government Involvement Might Not be Beneficial
<ul style="list-style-type: none"> <li>• Atomized or comparatively small market for users of products that will incorporate the standard once adopted</li> </ul>	<ul style="list-style-type: none"> <li>• Prime driver of petition for government involvement is settling inter-industry dispute</li> </ul>
<ul style="list-style-type: none"> <li>• Need to coordinate U.S. standard with foreign countries or foreign manufacturers</li> </ul>	<ul style="list-style-type: none"> <li>• Decision sought would require imposing new substantive regulations</li> </ul>
<ul style="list-style-type: none"> <li>• Identifiable public policy externality that makes unified standard desirable and makes timing urgent</li> </ul>	<ul style="list-style-type: none"> <li>• Redundant or at odds with other public policy endeavors</li> </ul>
<ul style="list-style-type: none"> <li>• Significant prior work on the part of affected industries and constituencies; government not starting from scratch</li> </ul>	<ul style="list-style-type: none"> <li>• Resolvable by commercial agreement between or among contending parties that will not violate antitrust laws.</li> </ul>

In general, the case studies demonstrate that the most hopeful case for a productive government role is where the market is least likely to provide a timely and useful answer, as in the case of public safety spectrum standards. The least likely cases for a productive government role are those in which the government is being called in by parties in interest to substitute for commercial negotiation, as in the case of cable modem standards and "open access." In between these two poles are cases that have mixed characteristics that will make government involvement a close question. Overall, government should be reluc-

tant to get involved in setting a standard and should establish a high bar for involvement on its own initiative or on the motion of interested parties. Part of the test should always be whether government can play a role within its competence and whether it can achieve a quicker, sounder result than the market left alone. These cases should be few and far between. But that generalization should not become a wooden rule that keeps government out of setting standards where the benefits are readily foreseen. Discerning such cases will always be a matter of keen judgment.

